Annex 1: Measurement diagrams to PARTIAL T E S T R E P O R T No.: 17-1-0221001T19a-A1

According to:
FCC Regulations
Part 22, Part 24, Part 27

ISED-Regulations
RSS-132 Issue 3, RSS-133 Issue 6,
RSS-139 Issue 3, RSS-Gen Issue 5
RSS-130 Issue 1

for

ACTIA Nordic AB

Telematic Device
ACUII-06

FCC ID: 2AGKKACUII-06H2
ISED: 20839-ACUII06H2

Laboratory Accreditation and Listings		
ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01 Accredited EMC-Test Laboratory	Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	Voluntary Controls for Electromagnetic Emissions Reg. No.: R-4452, C-20009, T-20006, G-20013
Wi Fi ALLIANCE AUTHORIZED RF LABORATORY	ctia Authorized™ Test Lab Lab Code: 20011130-00	FEDERAL COMMUNICATIONS COMMISSION USA MRA US-EU 0003
accredited according to DIN EN ISO/IEC 17025		

CETECOM GmbH
Laboratory Radio Communications & Electromagnetic Compatibility
Im Teelbruch 116 • 45219 Essen • Germany
Registered in Essen, Germany, Reg. No.: HRB Essen 8984
Tel.: + 49 (0) 20 54 / 95 19-954 • Fax: + 49 (0) 20 54 / 95 19-964
E-mail: info@cetecom.com • Internet: www.cetecom.com

Laboratory Accreditation and Listings

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1.1. Magnetic field emissions radiated (FDD Band II, IV and V transmitting mode)

1.1.1. External Antenna

Diagram 2.01a

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band2 Channel_9262
Power during tests:	13.8 V DC
Comment 1:	DUT Standing, External Antenna

EUT Information

Manufacturer:	Actia nordic AB
Model:	ACUII-06
Type:	Telematic Device
HW version:	H2
SW version:	14
Serial number:	30207090
Power Supply:	13.8VDC

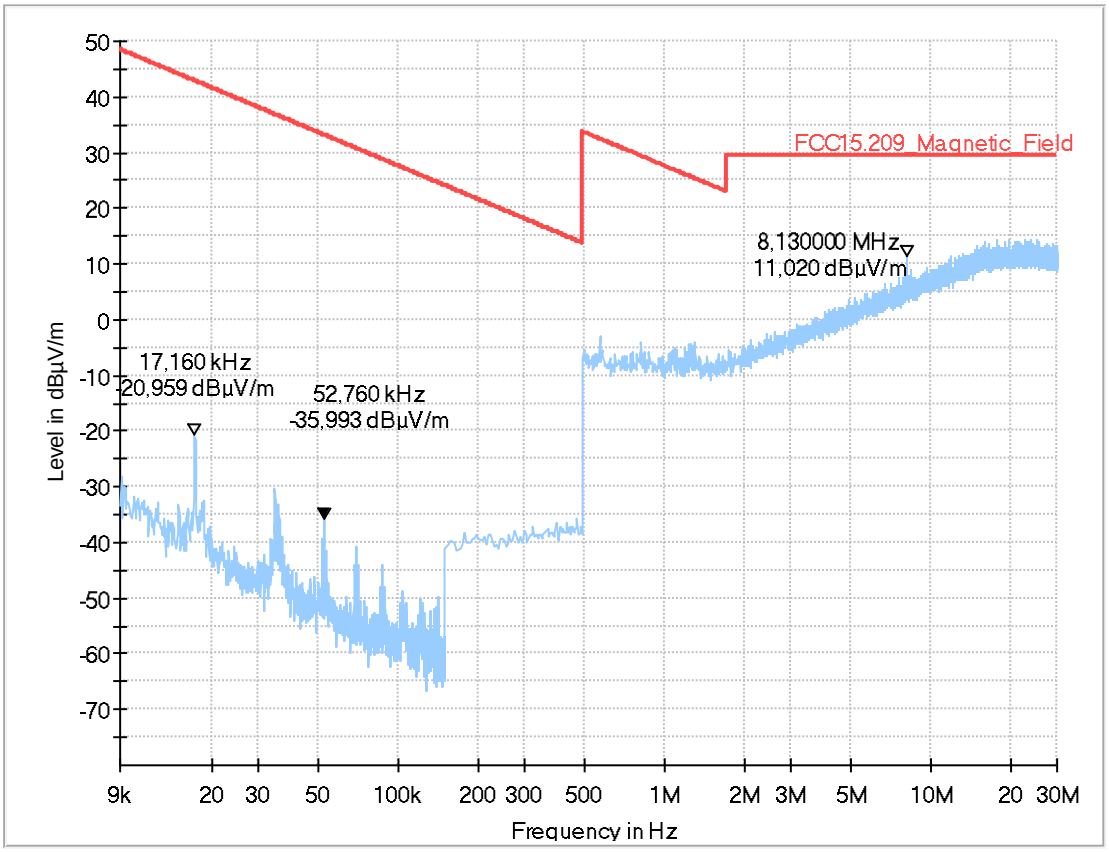


Diagram 2.01b

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band2 Channel_9262
Power during tests:	13.8 V DC
Comment 1:	DUT Laying, External Antenna

EUT Information **Please see Diagram Number: 2.01a**

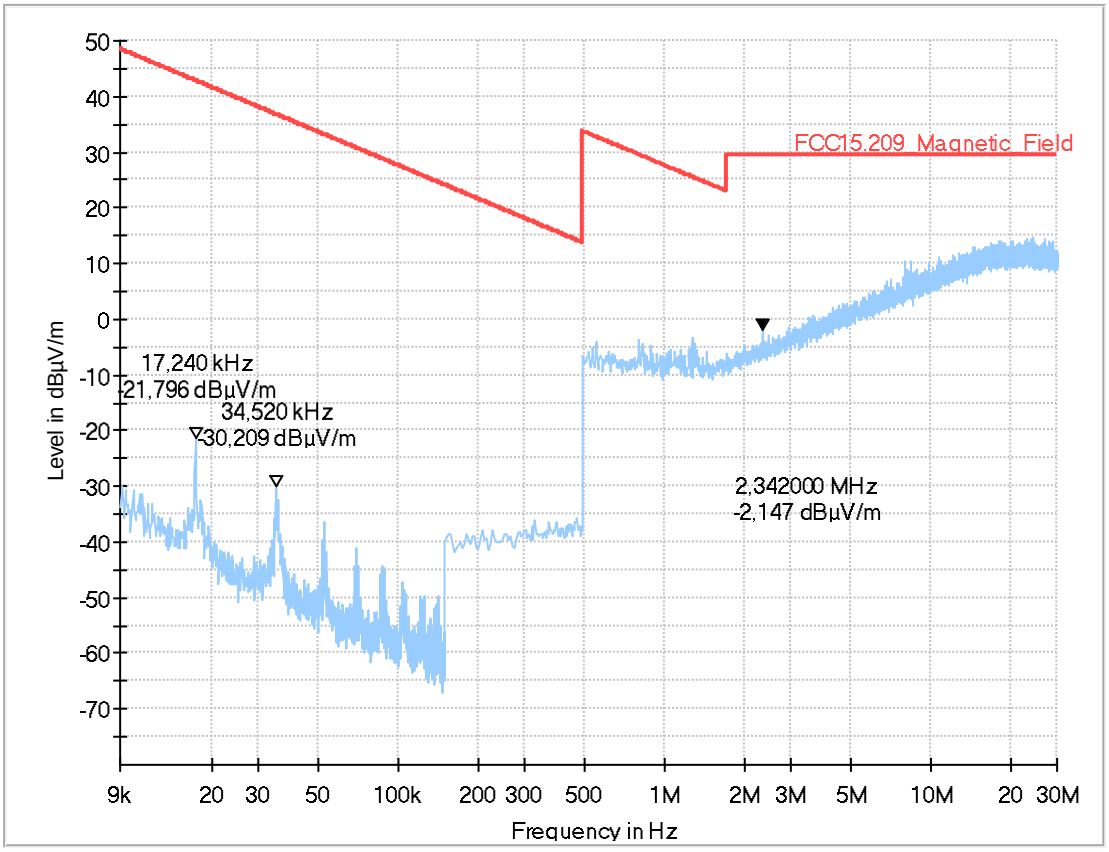


Diagram 2.02a

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band4 Channel_1450
Power during tests:	13.8 V DC
Comment 1:	DUT Standing, External Antenna

EUT Information **Please see Diagram Number: 2.01a**

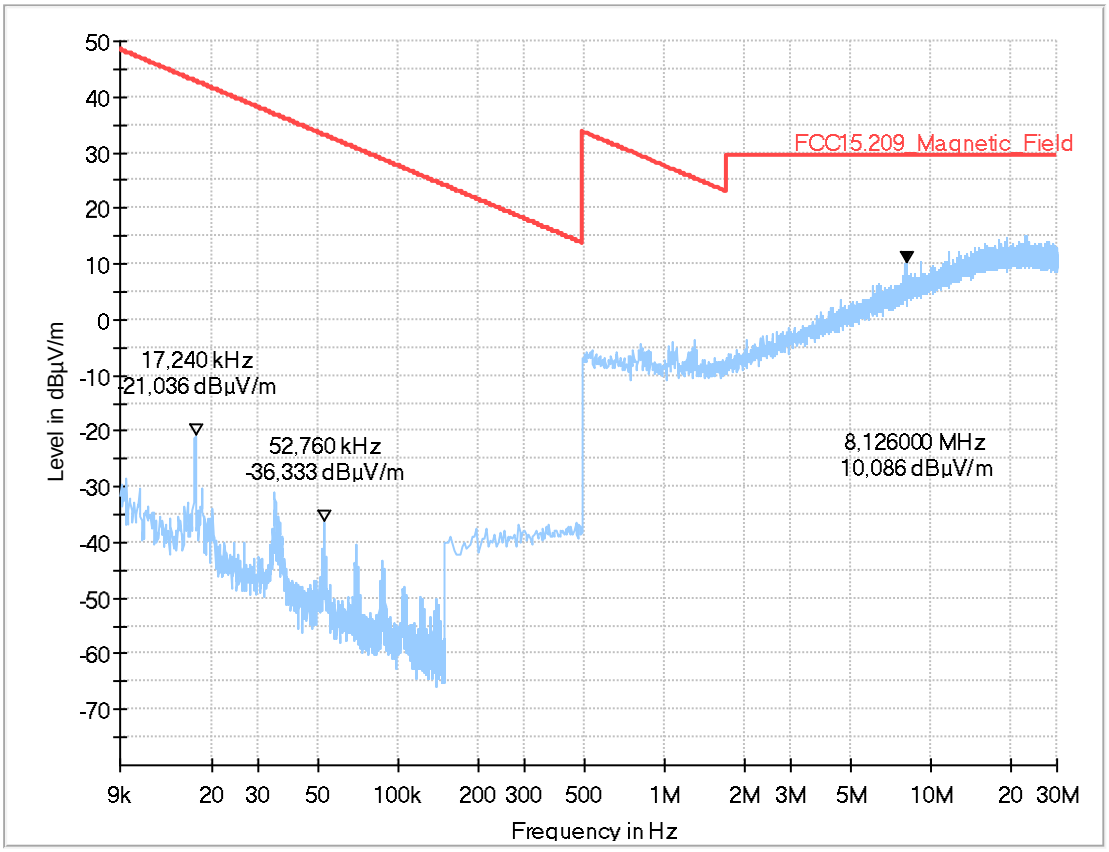


Diagram 2.02b

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band4 Channel_1450
Power during tests:	13.8 V DC
Comment 1:	DUT Laying, External Antenna

EUT Information **Please see Diagram Number: 2.01a**

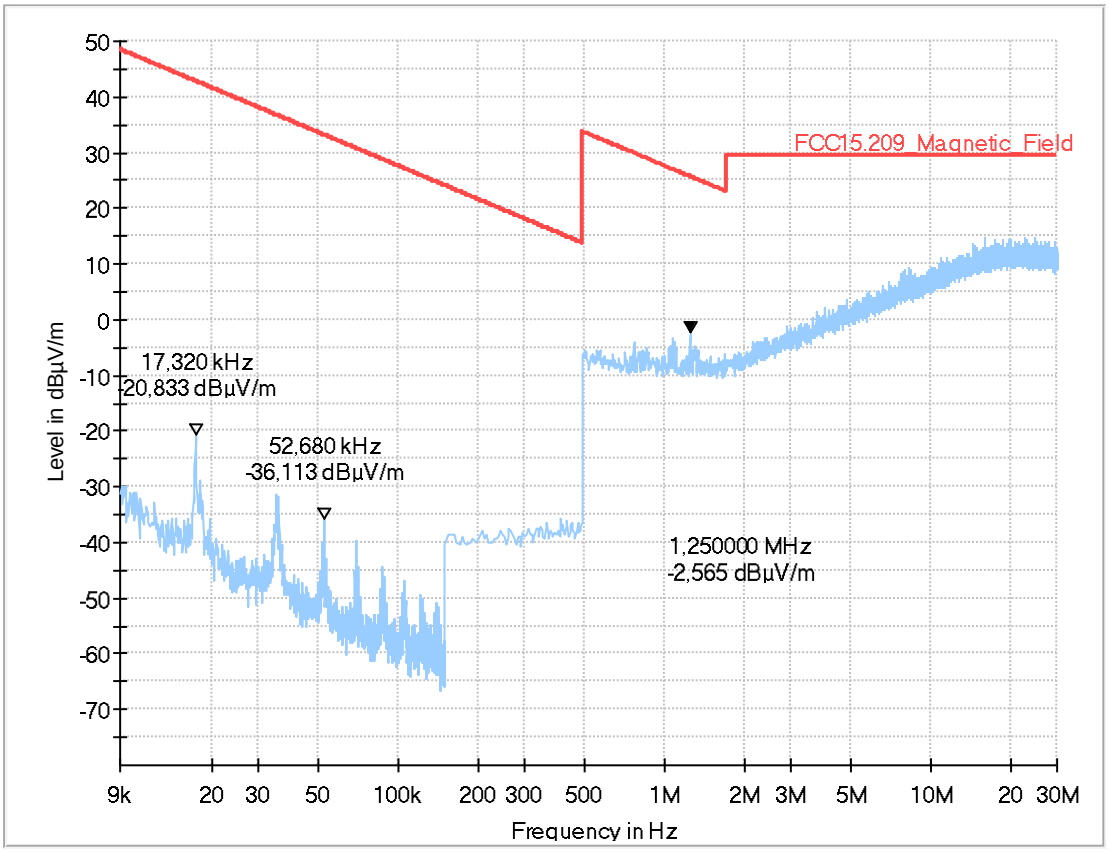


Diagram 2.03a

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band 5 Channel_4183
Power during tests:	13.8 V DC
Comment 1:	DUT Standing, External Antenna

EUT Information **Please see Diagram Number: 2.01a**

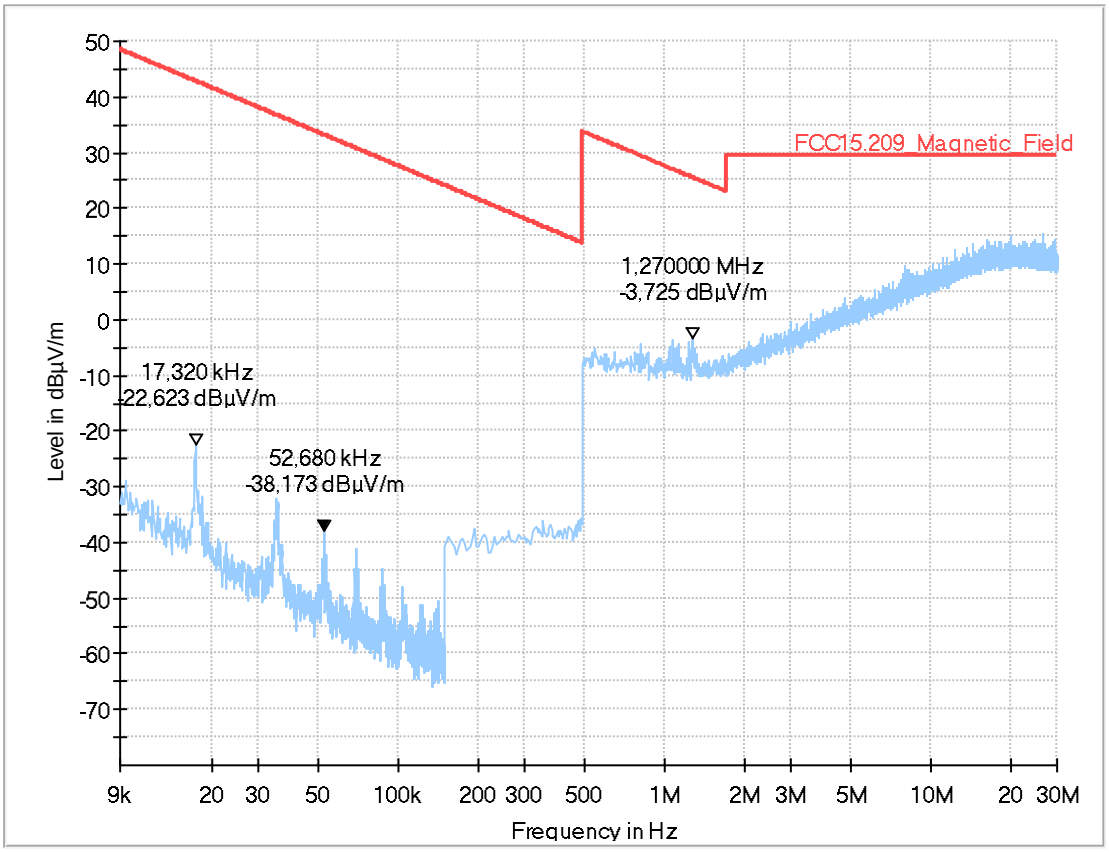
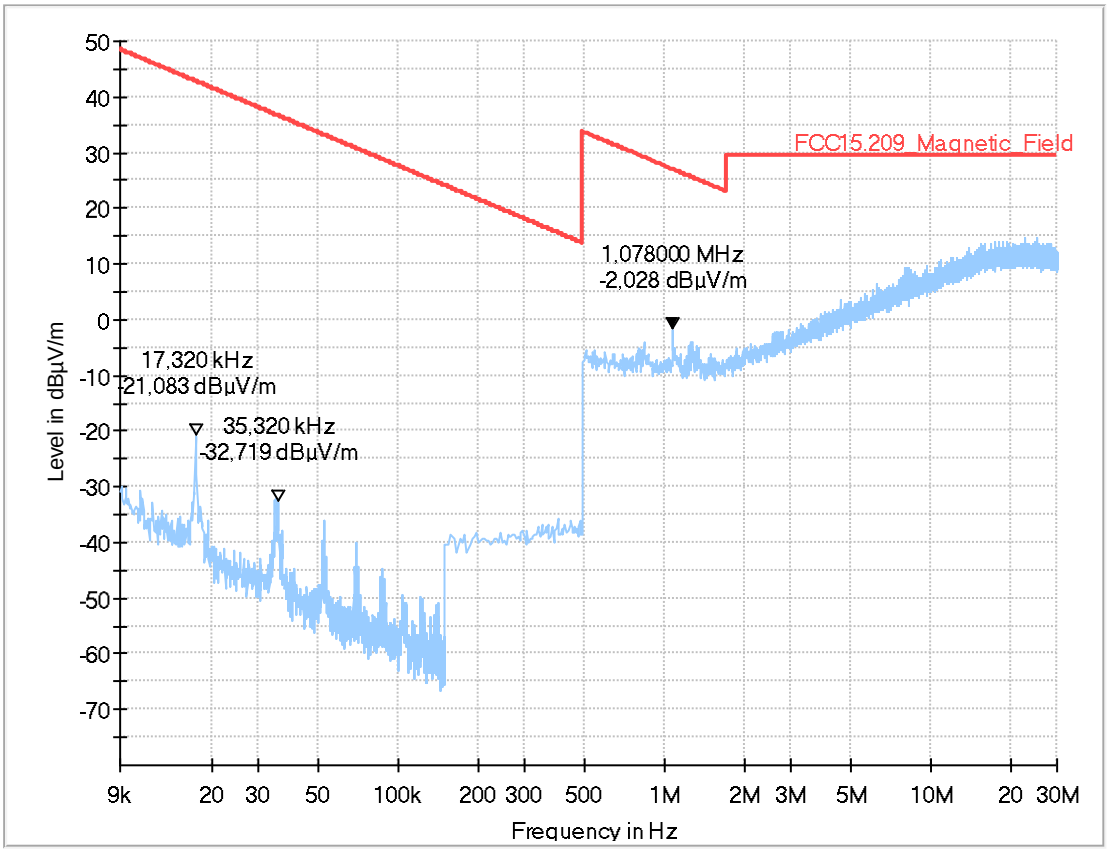


Diagram 2.03b

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band 5 Channel_4183
Power during tests:	13.8 V DC
Comment 1:	DUT Laying, External Antenna

EUT Information **Please see Diagram Number: 2.01a**



1.1.2. Internal Antenna

Diagram 2.04a

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band 2 Channel_9262
Power during tests:	13.8 V DC
Comment 1:	DUT Standing Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**

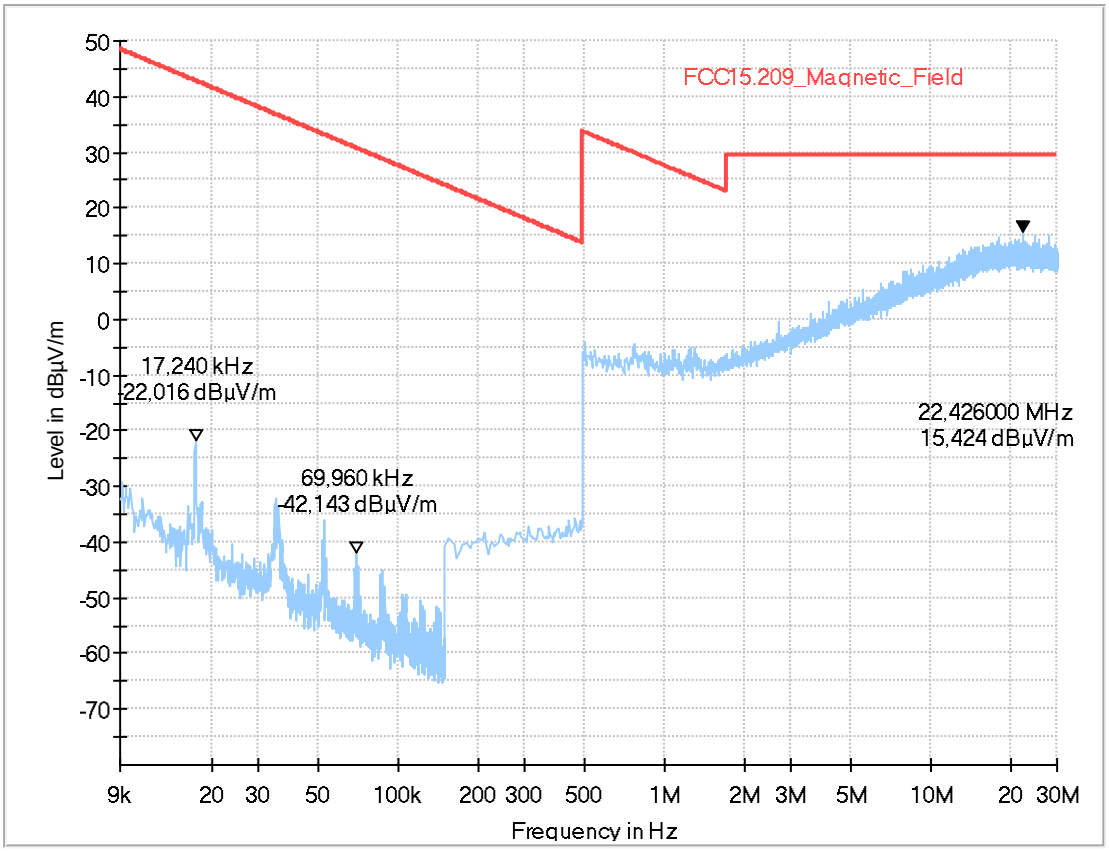


Diagram 2.04b

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band 2 Channel_9262
Power during tests:	13.8 V DC
Comment 2:	DUT Laying, Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**

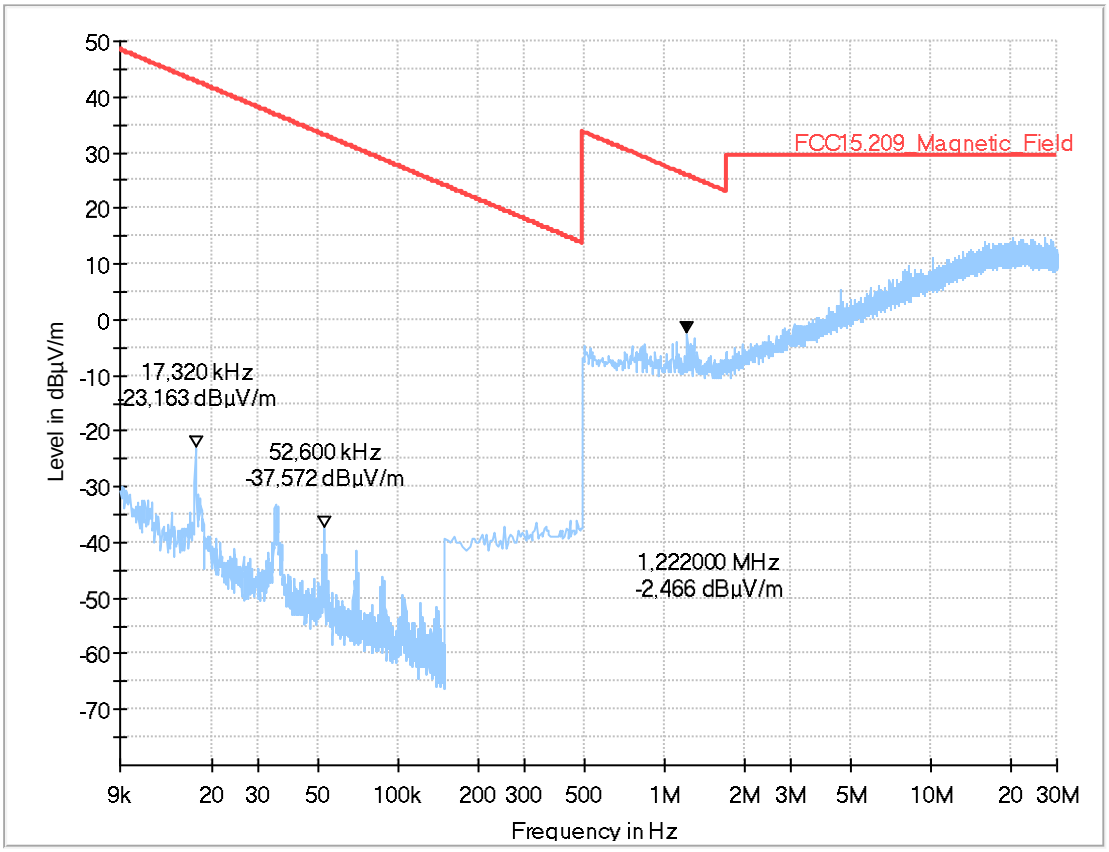


Diagram 2.05a

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band 4 Channel_1450
Power during tests:	13.8 V DC
Comment 1:	DUT Standing Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**

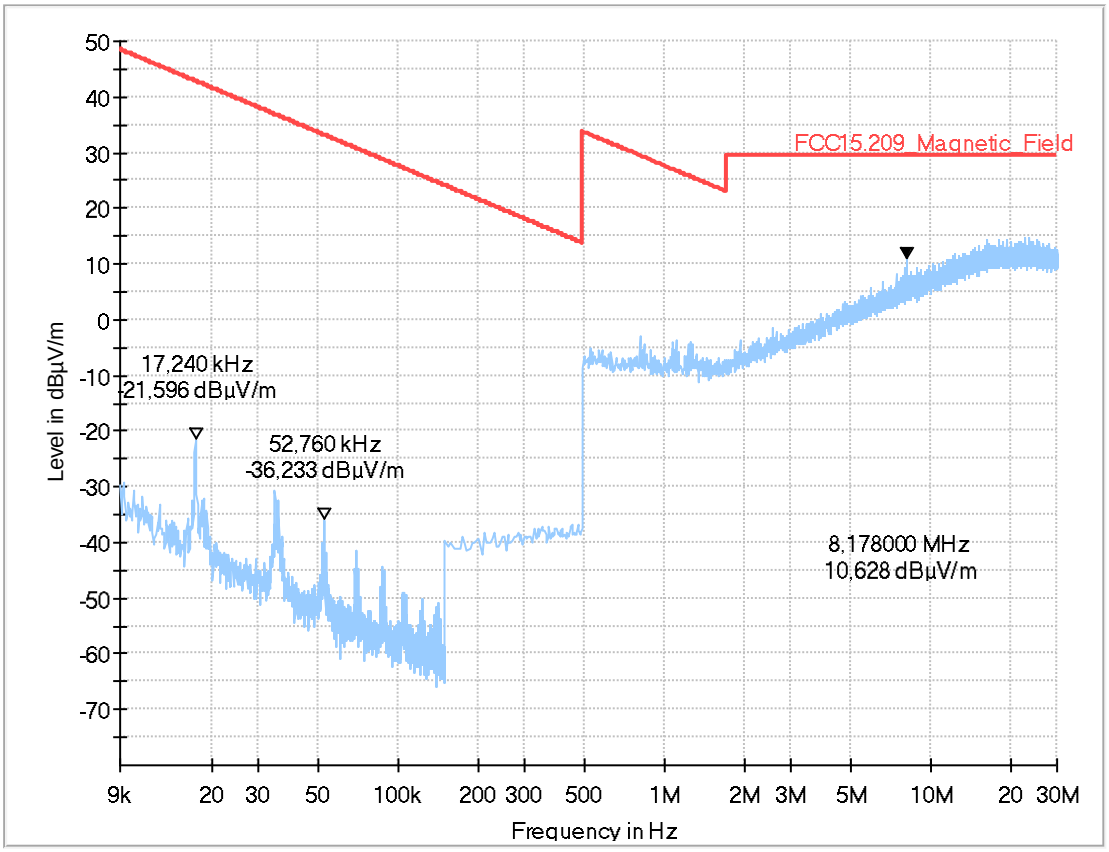


Diagram 2.05b

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band 4 Channel_1450
Power during tests:	13.8 V DC
Comment 1:	DUT Laying, Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**

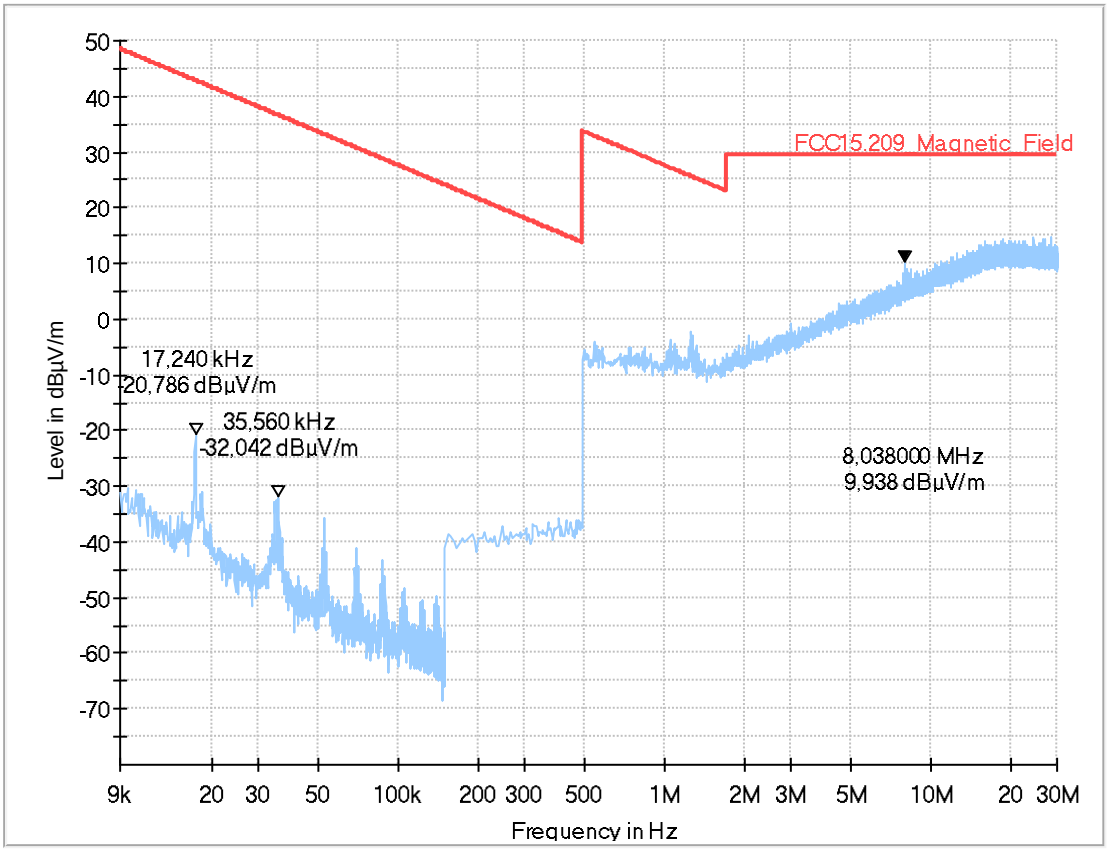


Diagram 2.06a

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band 5 Channel_4183
Power during tests:	13.8 V DC
Comment 1:	DUT Standing Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**

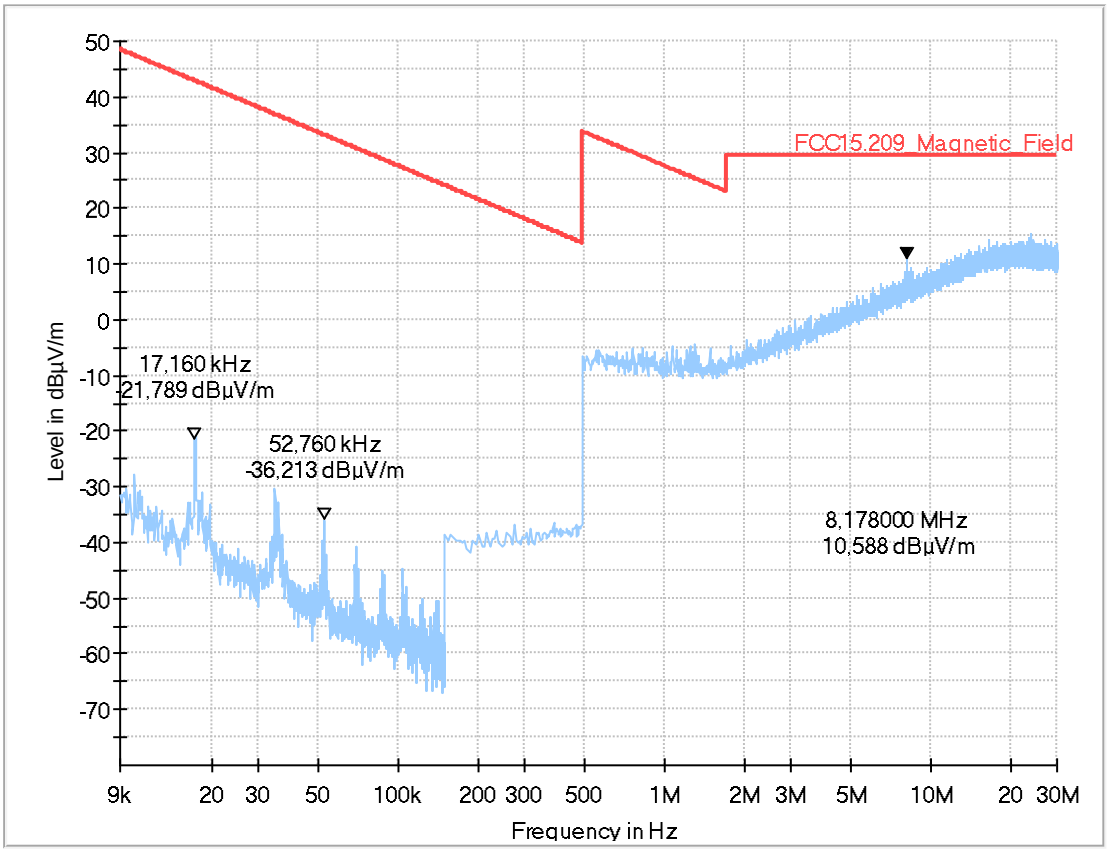
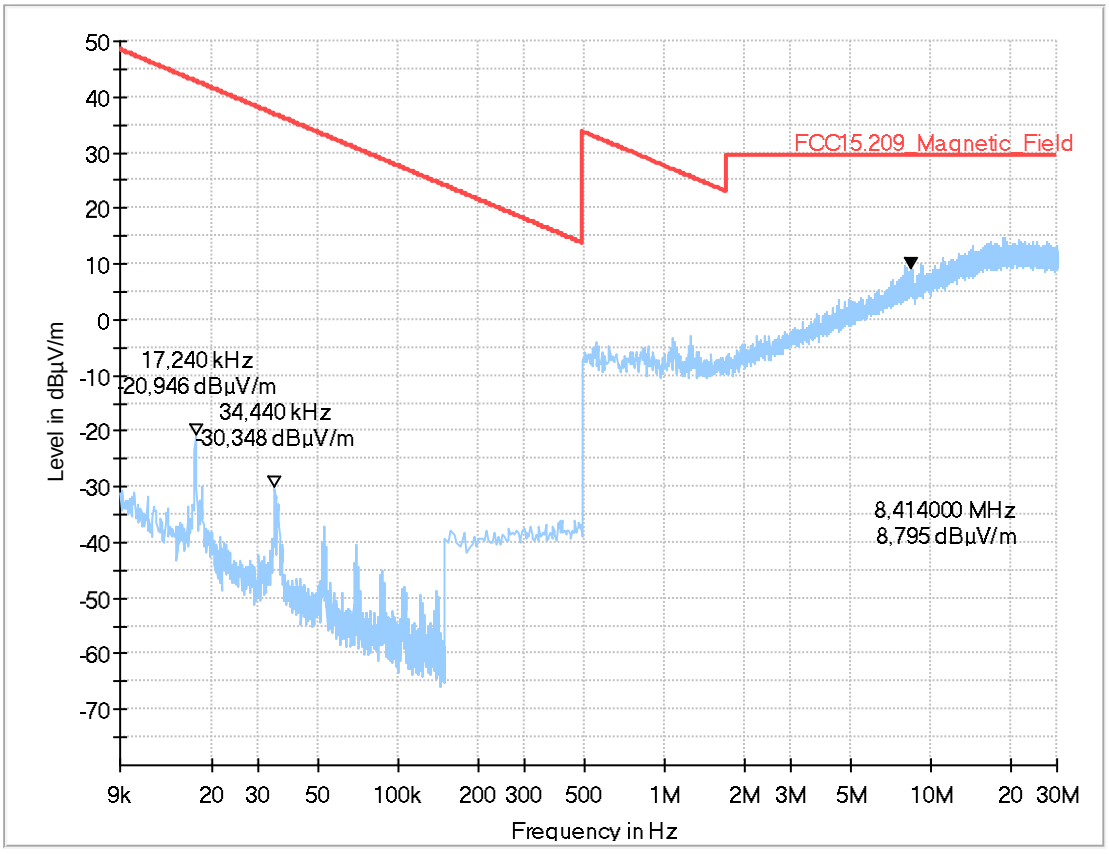


Diagram 2.06b

Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC.V9.25.00
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	KIv
Operation Mode	UMTS_Band 5 Channel_4183
Power during tests:	13.8 V DC
Comment 1:	DUT Laying, Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**



1.2. Spurious emissions radiated (FDD Band II transmitting mode)

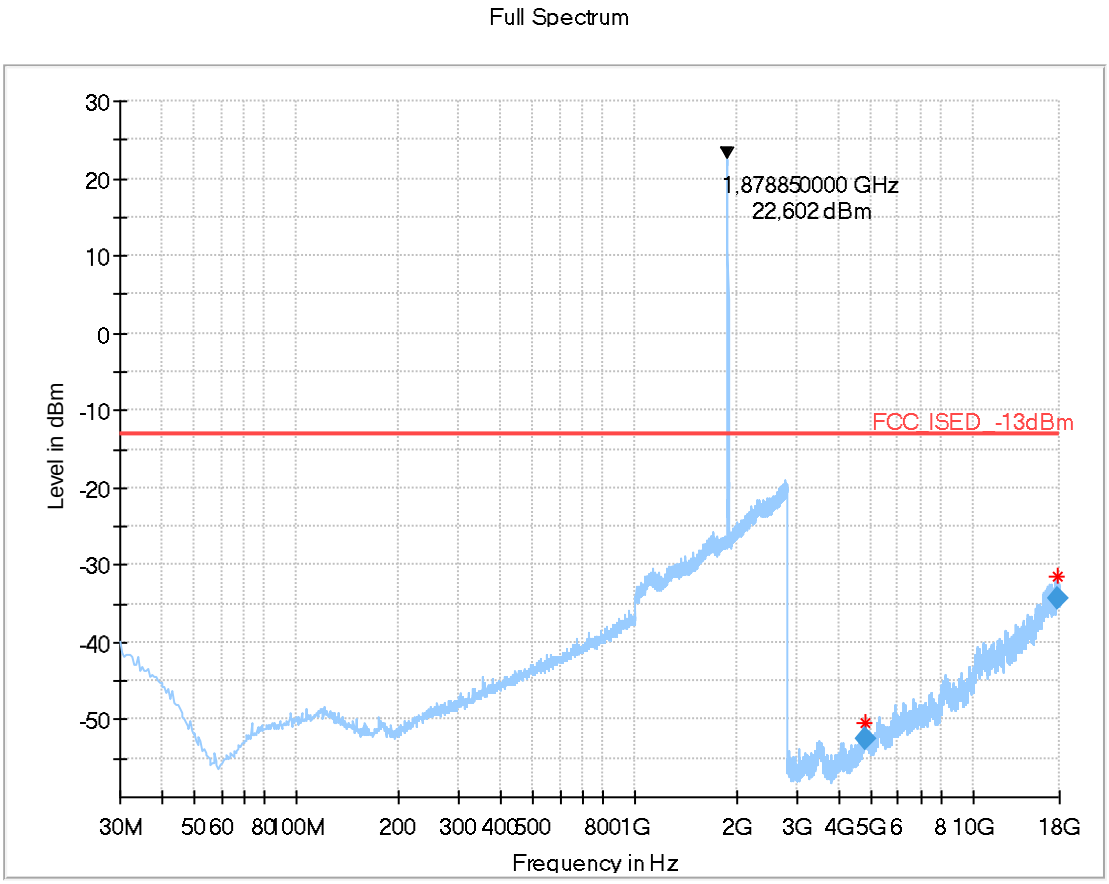
1.2.1. Radiated emissions on FDD Band II - External Antenna

8.20a_RSE_R_Ch9400_RMC

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Room
Test Standard:	FCC FCC Part 27.53(h) AWS emission limits / RSS-139, Issue 3
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V9.26.0
Operation mode:	UMTS Band 2 _Channel_9400_UL 1880 MHz
Operator Name:	TFra
Comment:	EUT Standing_External Antenna

EUT Information **Please see Diagram Number: 2.01a**



Final_Result

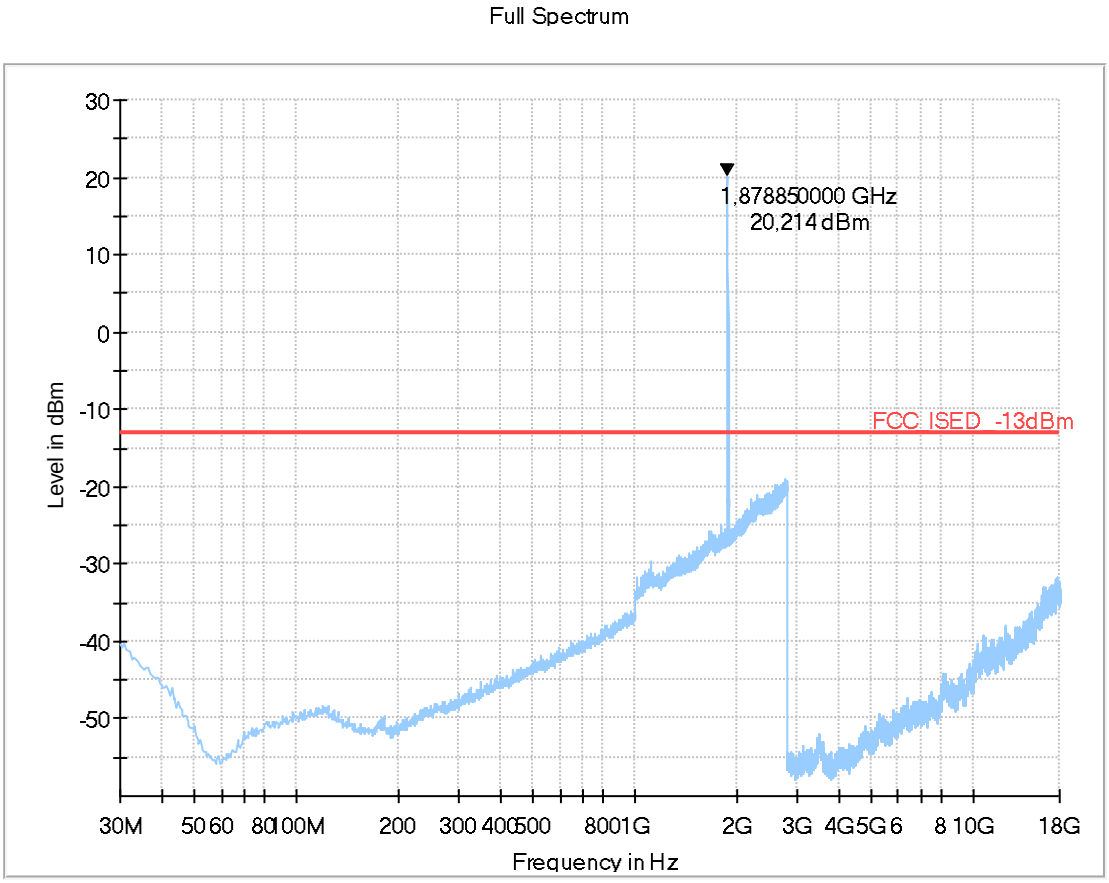
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Comment
4771.095000	-52.58	-13.00	39.58	100.0	1000.000	154.0	V	47.0	11:01:55 - 02.06.2018
17749.115000	-34.36	-13.00	21.36	100.0	1000.000	154.0	H	337.0	10:57:55 - 02.06.2018

8.20b_RSE_R_Ch9400_RMC

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Room
Test Standard:	FCC FCC Part 27.53(h) AWS emission limits / RSS-139, Issue 3
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V9.26.0
Operation mode:	UMTS Band 2 UL 1880 MHz
Operator Name:	SLo
Comment:	EUT Laying_External Antenna

EUT Information **Please see Diagram Number: 2.01a**



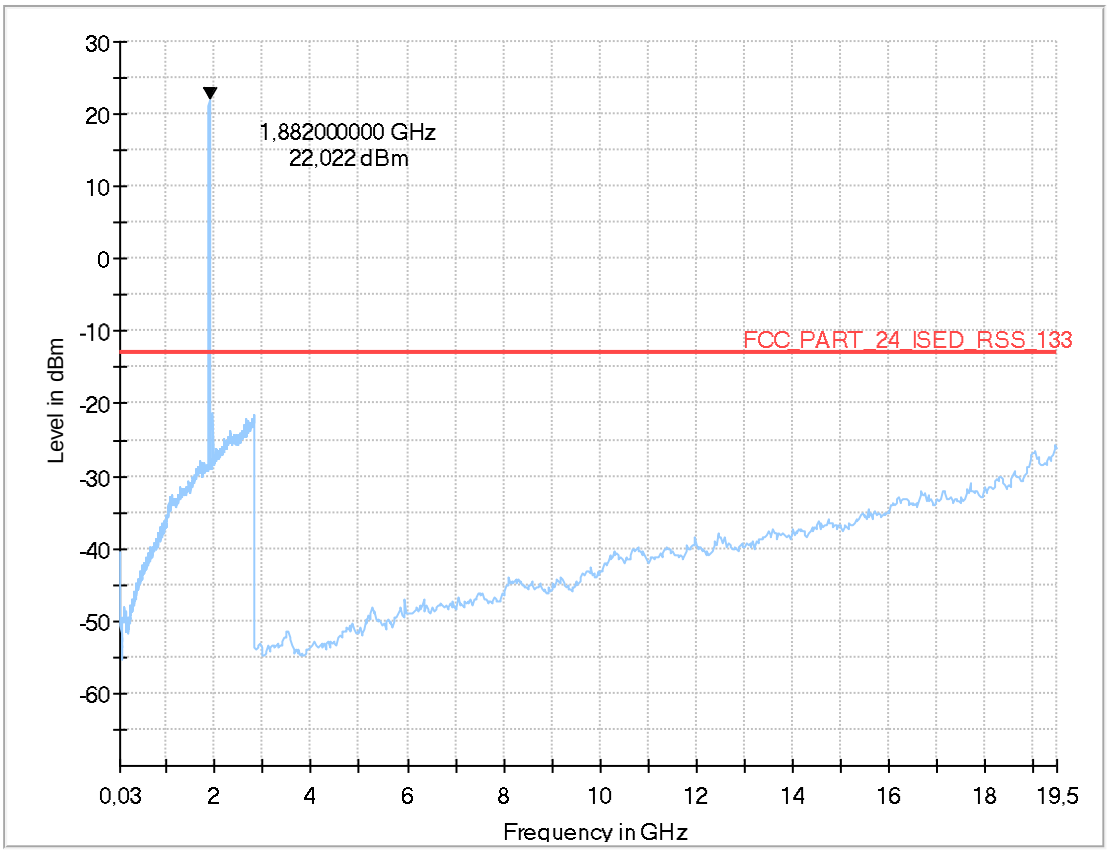
1.2.2. Radiated emissions on FDD Band II - Internal Antenna

8.21a_RSE_R_Ch9400_RMC

Common Information

Test Description:	Radiated Spurious Emissions UMTS FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24
Operating Mode:	UMTS Band 2 UL 1880 MHz
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	KIv
Comment:	EUT Standing _Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**

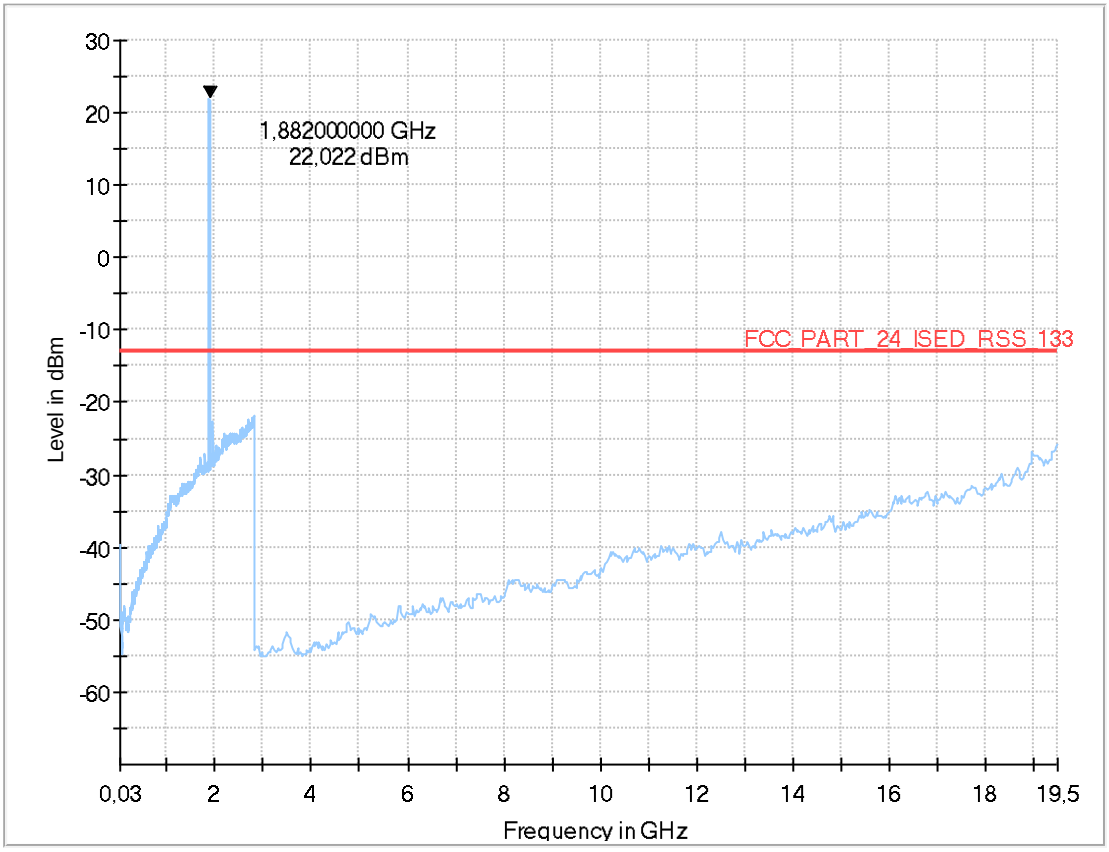


8.21b_RSE_R_Ch9400_RMC

Common Information

Test Description:	Radiated Spurious Emissions UMTS FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24
Operating Mode:	UMTS Band 2 UL 1880 MHz
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	KIv
Comment:	EUT Laying _Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**



1.3. Spurious emissions radiated (FDD Band IV transmitting mode)

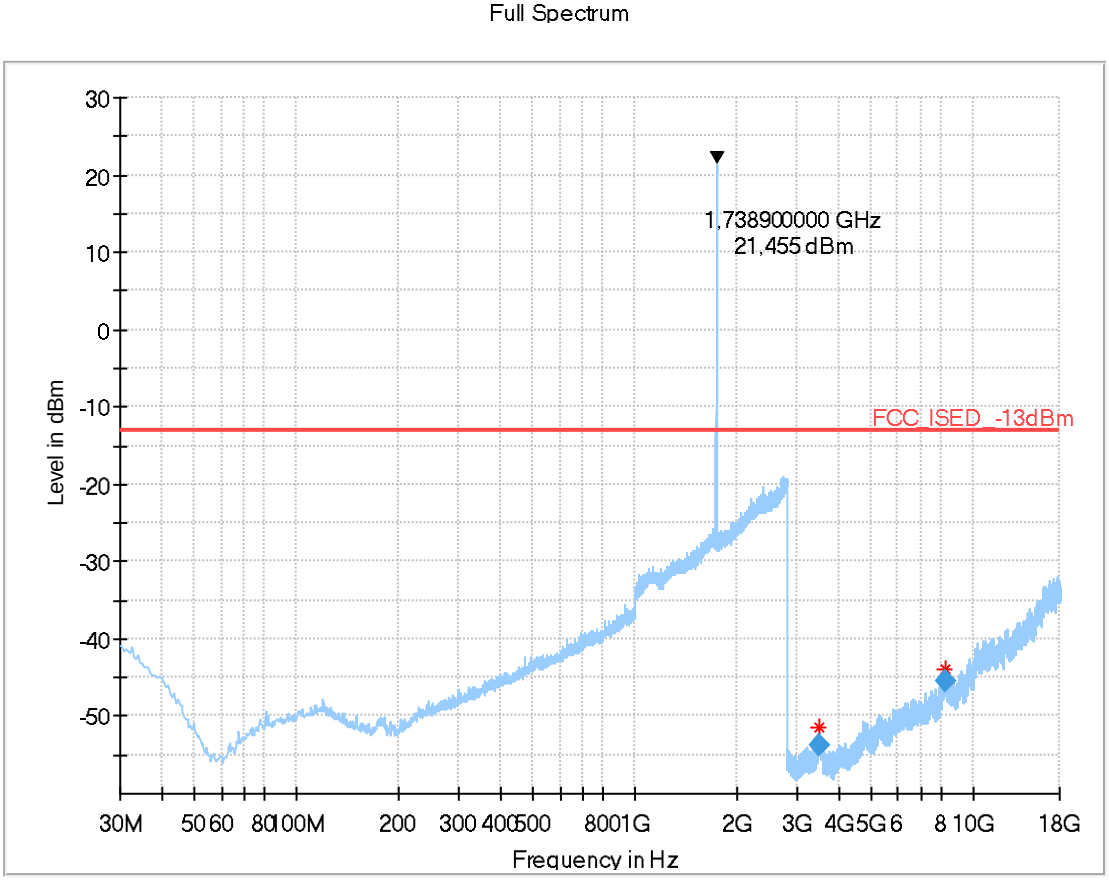
1.3.1. Radiated emissions on FDD Band IV - External Antenna

8.40a_RSE_R_Ch1450_RMC

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Room
Test Standard:	FCC FCC Part 27.53(h) AWS emission limits / RSS-139, Issue 3
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V9.26.0
Operation mode:	Band 4 UL 1738,9 MHz CH 1450
Operator Name:	TFra
Comment:	EUT Standing_External Antenna

EUT Information **Please see Diagram Number: 2.01a**



Final_Result

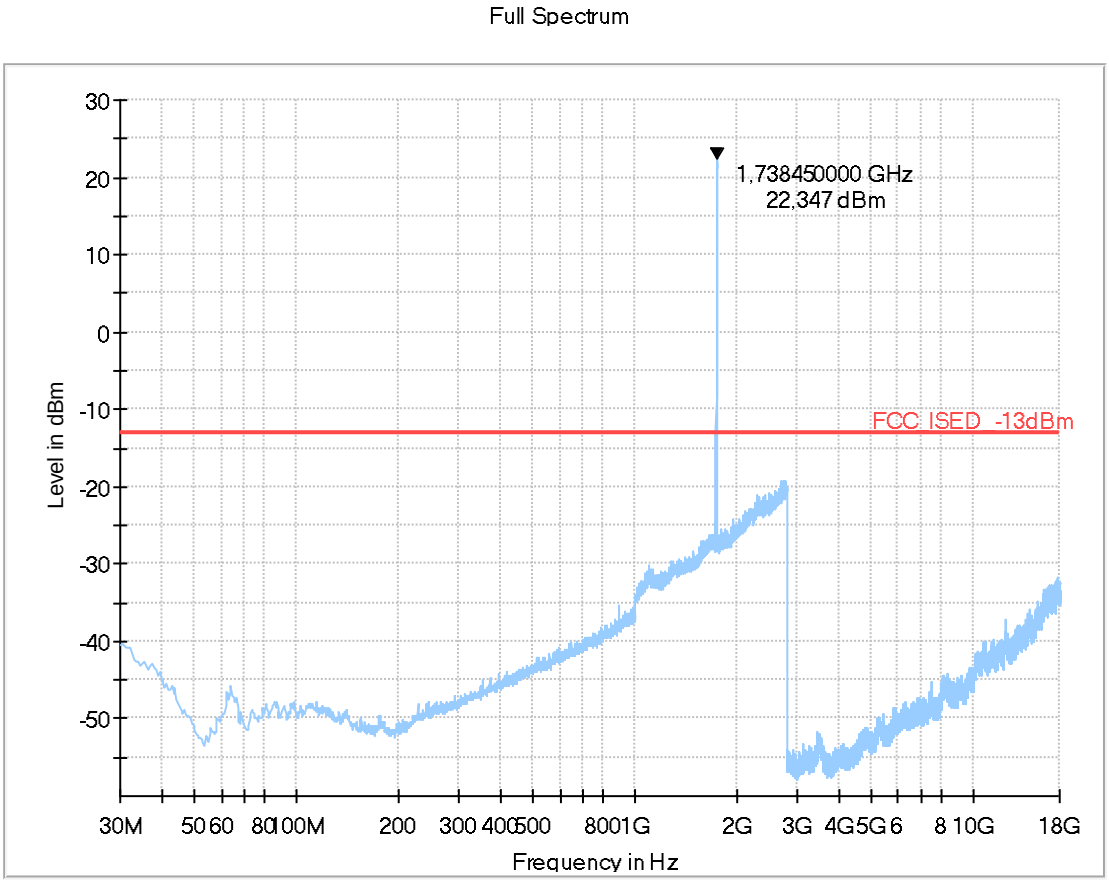
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Comment
3515.215000	-53.83	-13.00	40.83	100.0	1000.000	154.0	H	281.0	10:01:41 - 02.06.2018
8272.690000	-45.51	-13.00	32.51	100.0	1000.000	154.0	V	206.0	10:04:52 - 02.06.2018

8.40b_RSE_R_Ch1450_RMC

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Room
Test Standard:	FCC FCC Part 27.53(h) AWS emission limits / RSS-139, Issue 3
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V9.26.0
Operation mode:	Band 4 UL 1752,6 MHz CH 1450
Operator Name:	SLo
Comment:	EUT Laying_External Antenna

EUT Information **Please see Diagram Number: 2.01a**



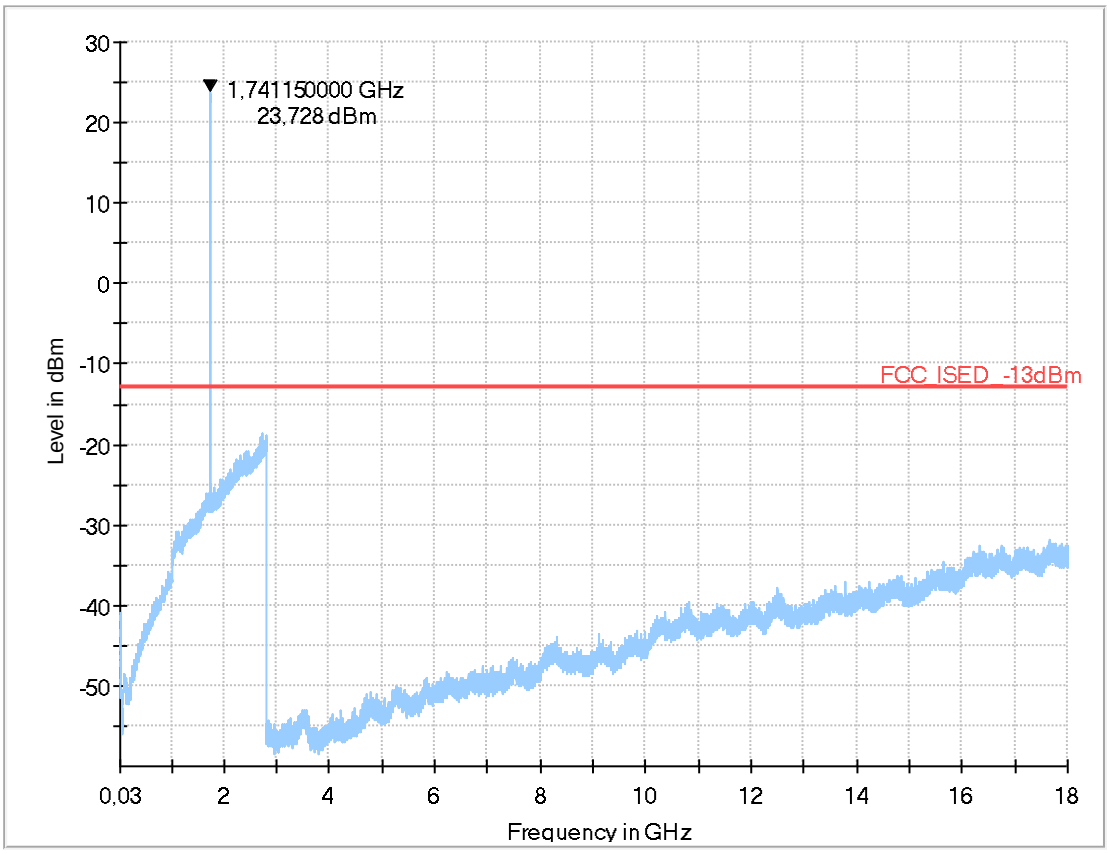
1.3.2. Radiated emissions on FDD Band IV - Internal Antenna

8.41a_RSE_R_Ch1450_RMC

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Room
Test Standard:	FCC FCC Part 27.53(h) AWS emission limits / RSS-139, Issue 3
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V9.26.0
Operation mode:	Band 4 UL 1741 MHz CH 1450
Operator Name:	KIv
Comment:	EUT Standing _Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**

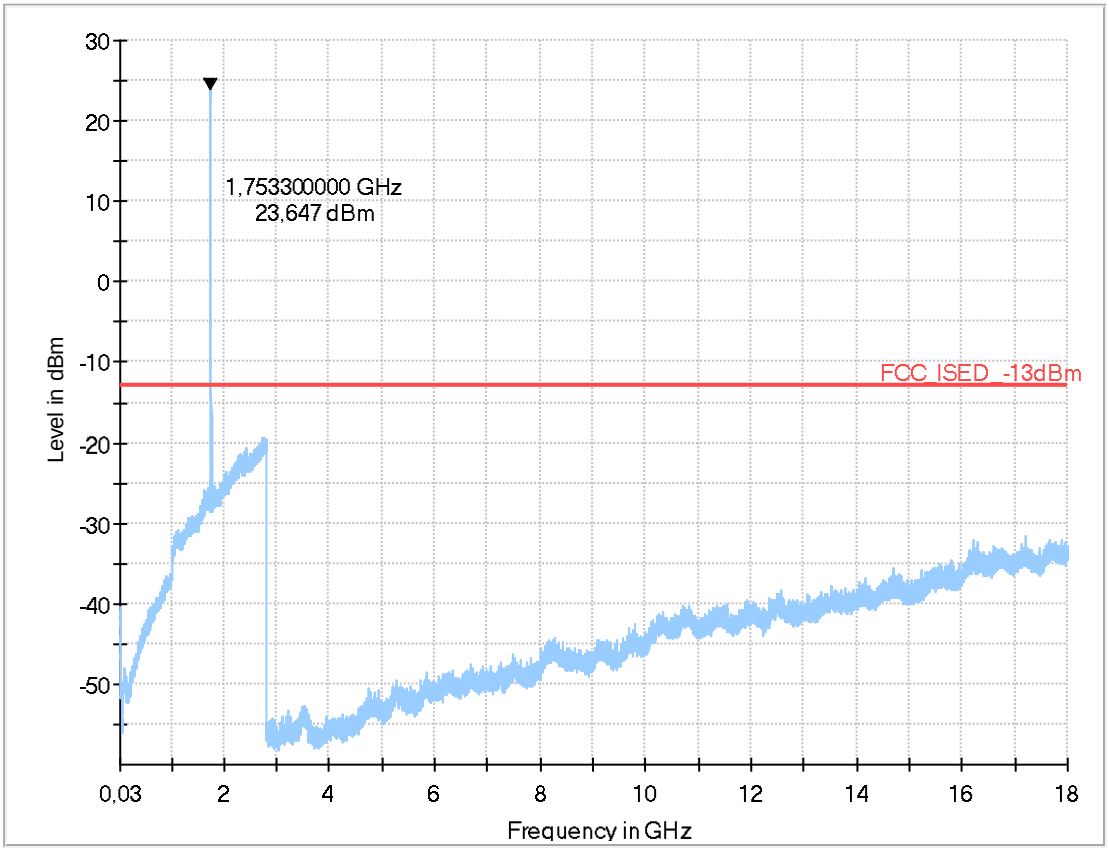


8.41b_RSE_R_Ch1513_RMC

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Room
Test Standard:	FCC FCC Part 27.53(h) AWS emission limits / RSS-139, Issue 3
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V9.26.0
Operation mode:	Band 4 UL 1752,6 MHz CH 1513
Operator Name:	KIv
Comment:	EUT Laying _Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**



1.4. Spurious emissions radiated (FDD Band V transmitting mode)

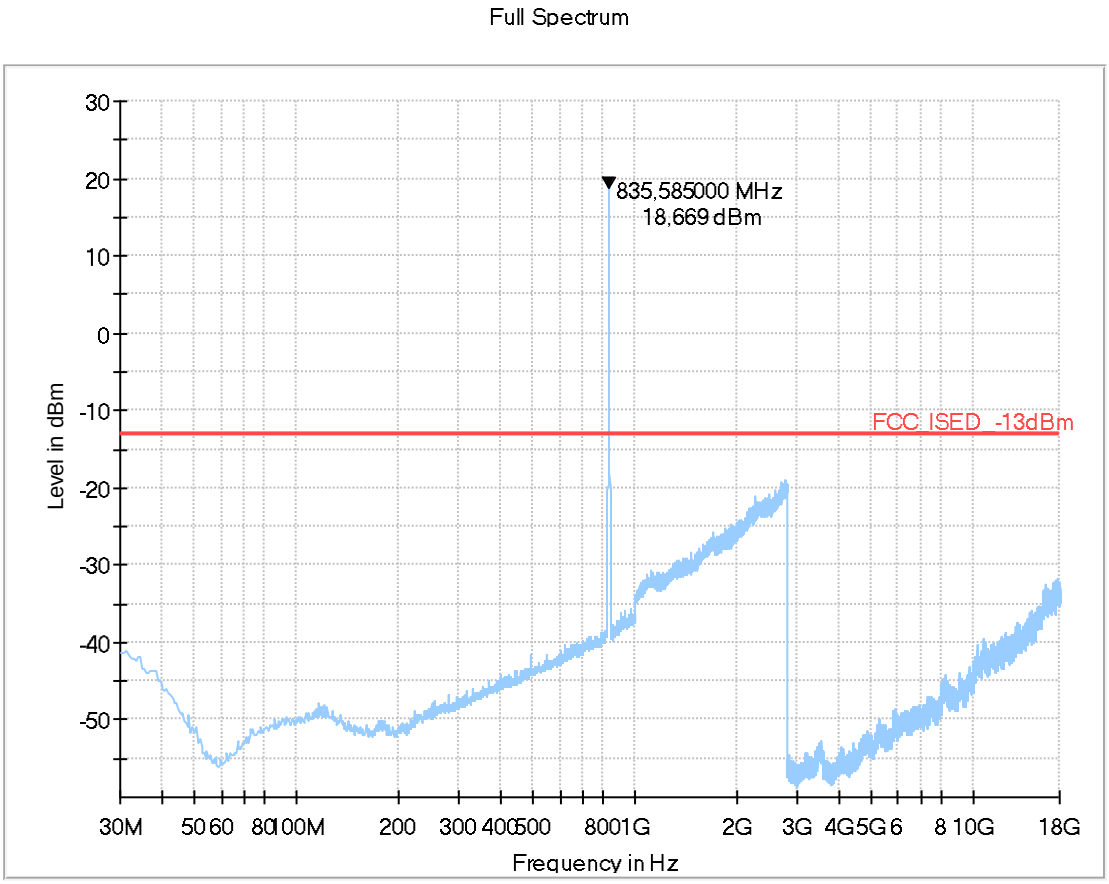
1.4.1. Radiated emissions on FDD Band V - External Antenna

8.50a_RSE_R_Ch4183_RMC

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Room
Test Standard:	FCC FCC Part 27.53(h) AWS emission limits / RSS-139, Issue 3
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V9.26.0
Operation mode:	Band 5 UL 836,6 MHz Ch4183
Operator Name:	SLo
Comment:	EUT Laying_External Antenna

EUT Information **Please see Diagram Number: 2.01a**

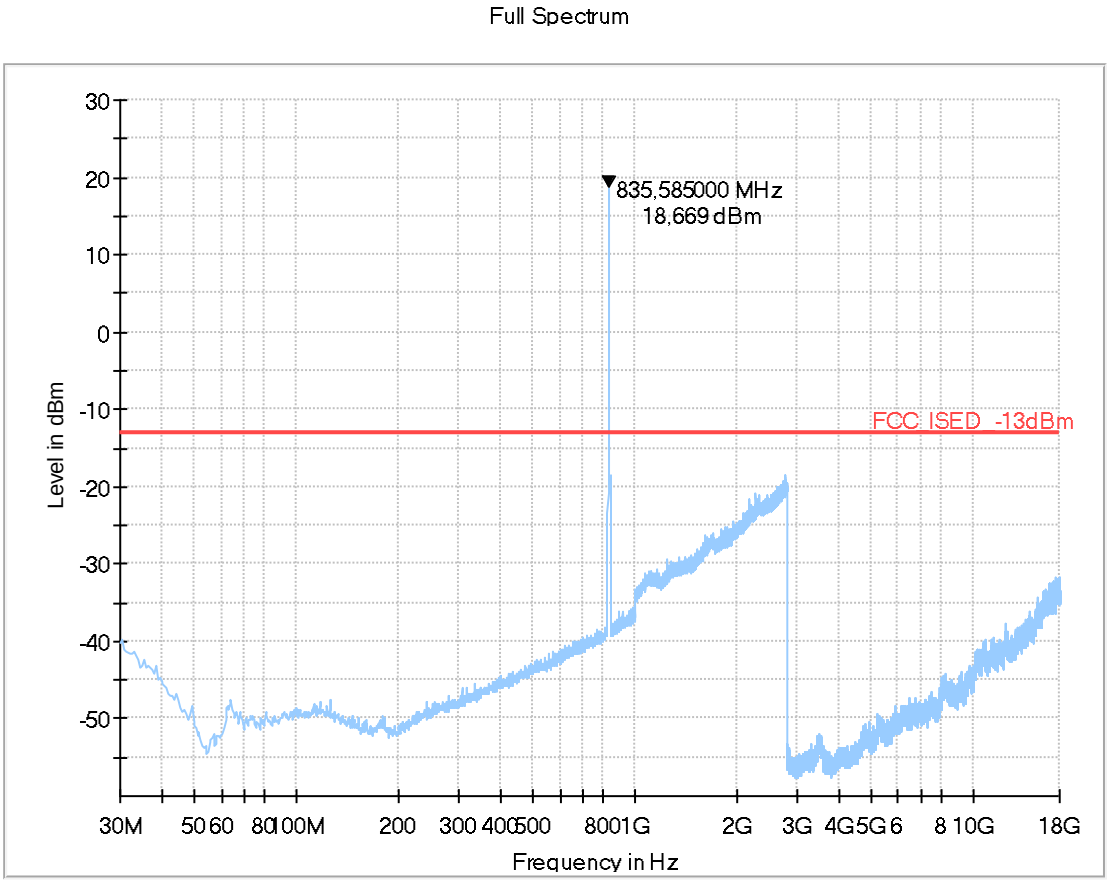


8.50b_RSE_R_Ch4183_RMC

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Room
Test Standard:	FCC FCC Part 27.53(h) AWS emission limits / RSS-139, Issue 3
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V9.26.0
Operation mode:	FCC Part 22 Band 5 UL 836,6 MHz Ch4183
Operator Name:	SLo
Comment:	EUT Laying_External Antenna

EUT Information **Please see Diagram Number: 2.01a**



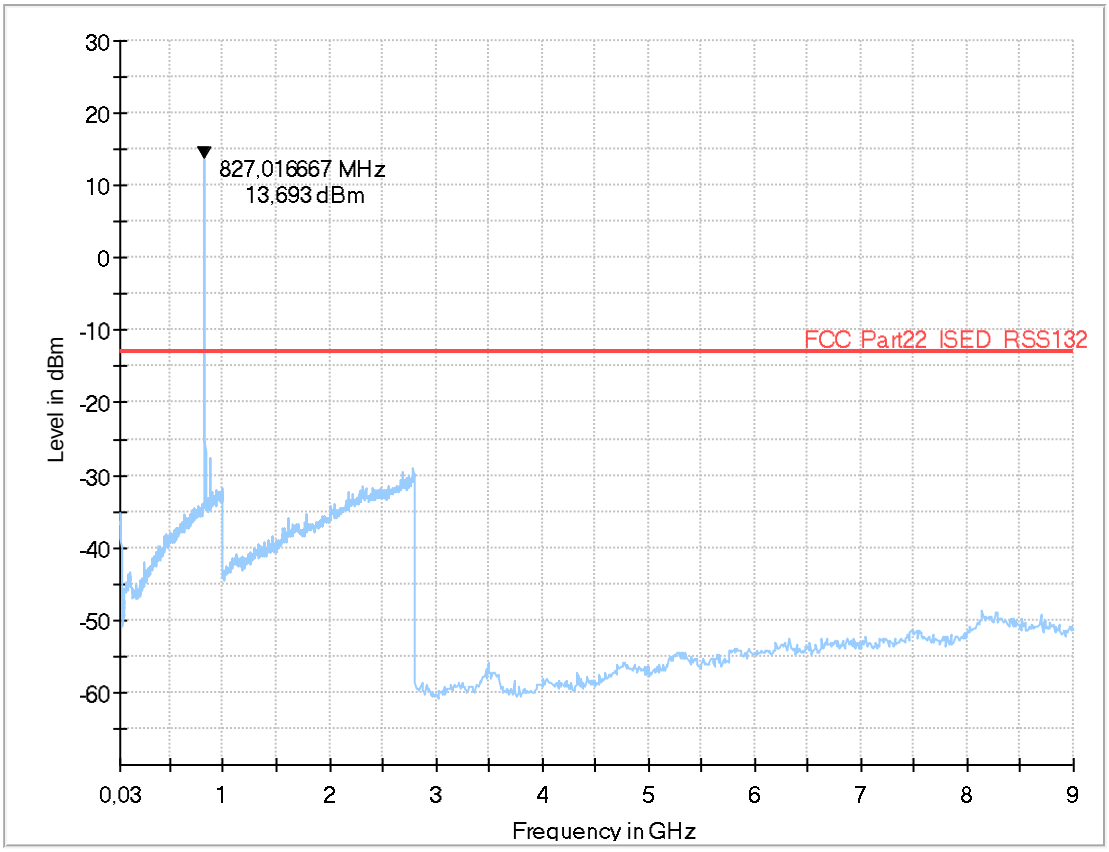
1.4.2. Radiated emissions on FDD Band V - Internal Antenna

8.51a_RSE_R_Ch4132_RMC

Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions UMTS FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	Band 5 UL 836,6 MHz Ch4132
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	KIv
Remarks:	EUT Standing _Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**

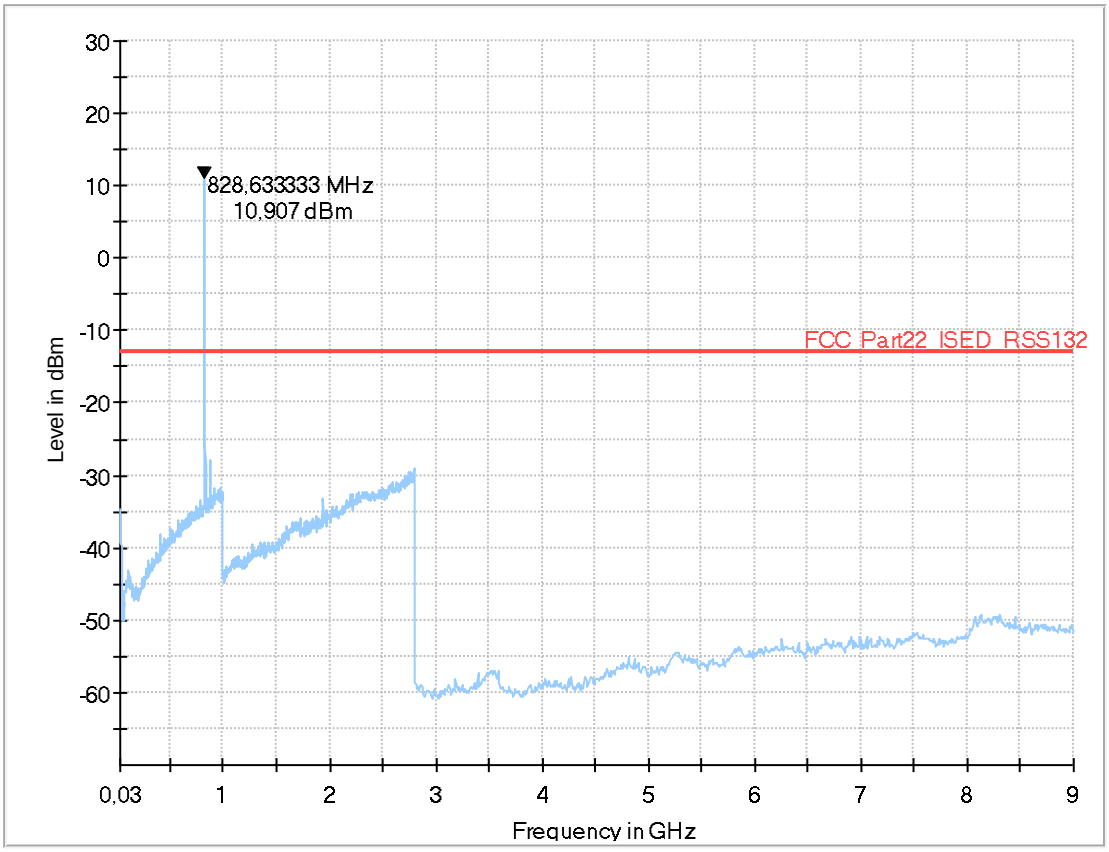


8.51b_RSE_R_Ch4132_RMC

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Room
Test Standard:	FCC Part 22
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V9.26.0
Operation mode:	Band 5 UL 836,6 MHz Ch4132
Operator Name:	KIv
Comment:	EUT Laying _Internal Antenna

EUT Information **Please see Diagram Number: 2.01a**

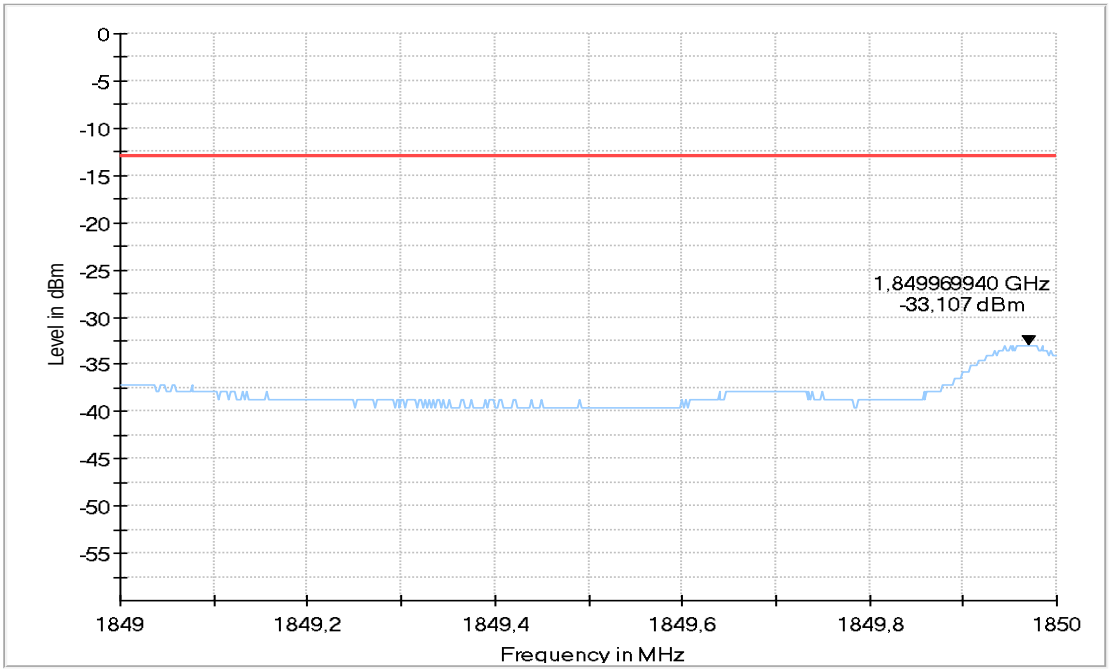


1.5. Radiated emissions on FDD Band II band-edge

1.5.1. Radiated emissions on FDD Band II band-edge - External Antenna

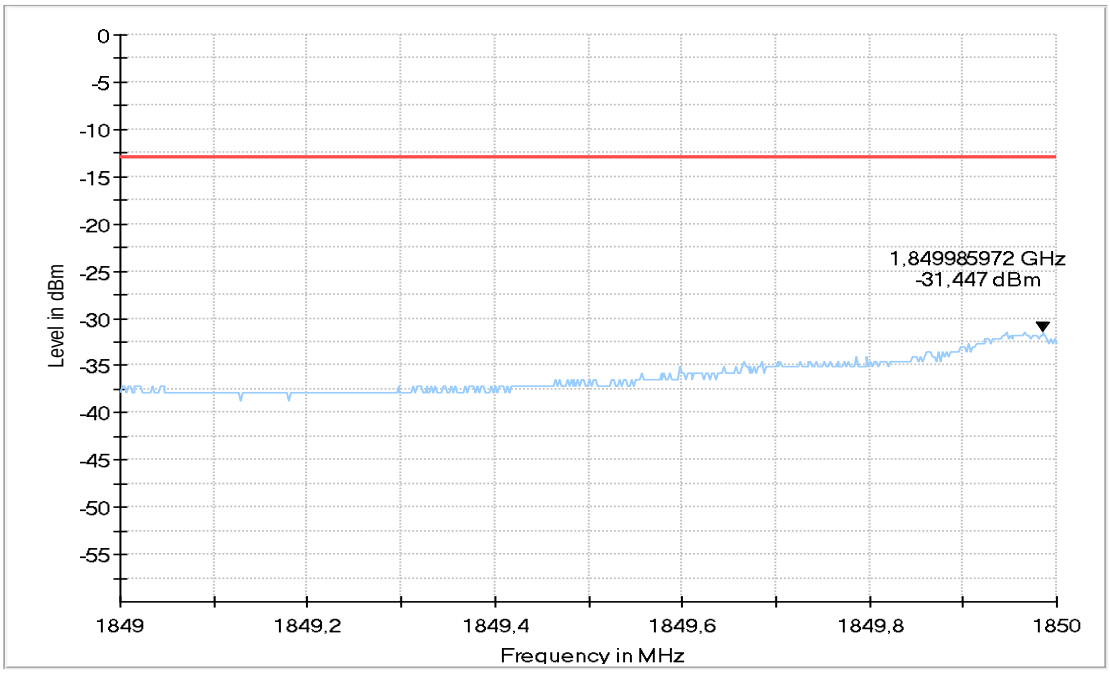
9.20a_BE_R_Ch9262_RMC_low_EUT_Standing

Full Spectrum

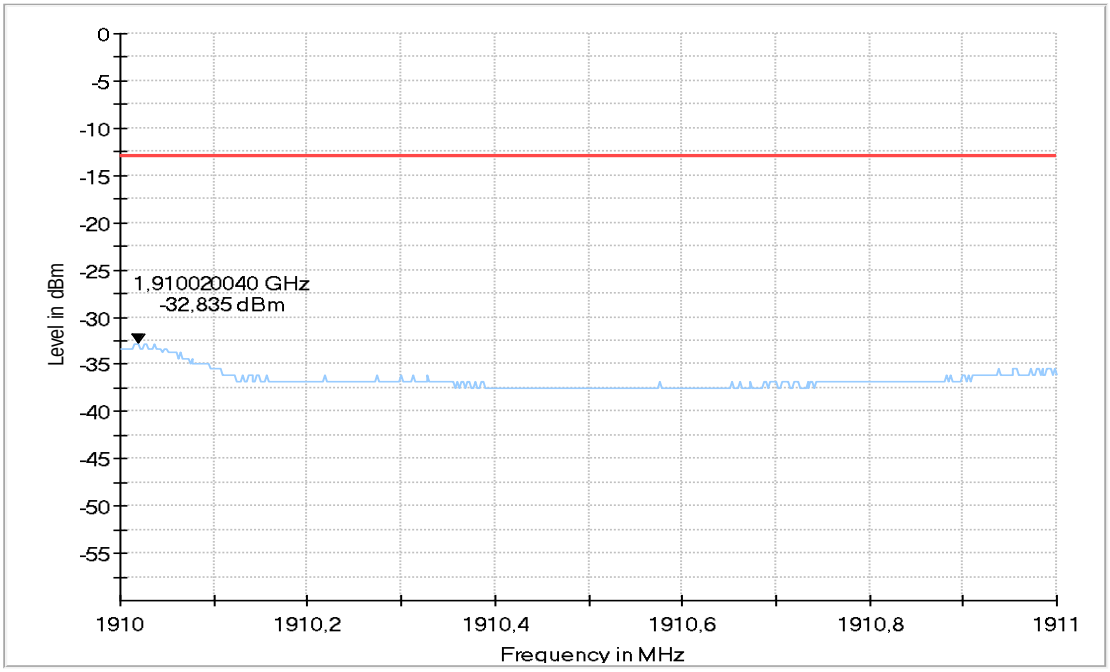


9.20b_BE_R_Ch9262_RMC_low_EUT_Laying

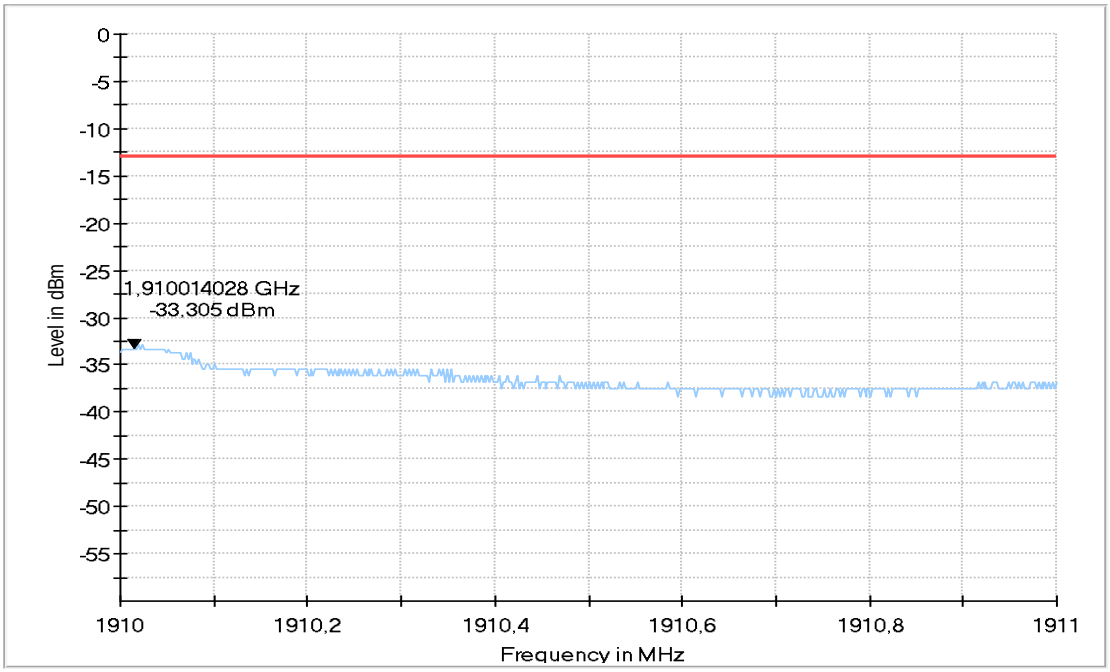
Full Spectrum



9.21a_BE_R_Ch9538_RMC_high_EUT_Standing

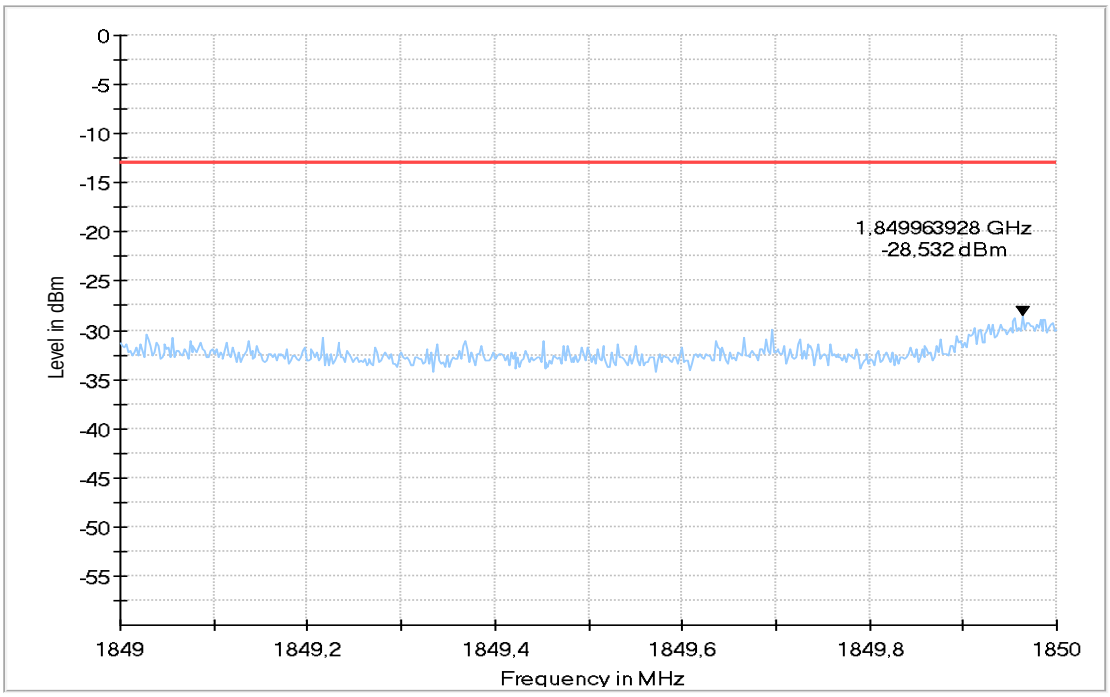


9.21b_BE_R_Ch9538_RMC_high_EUT_Laying

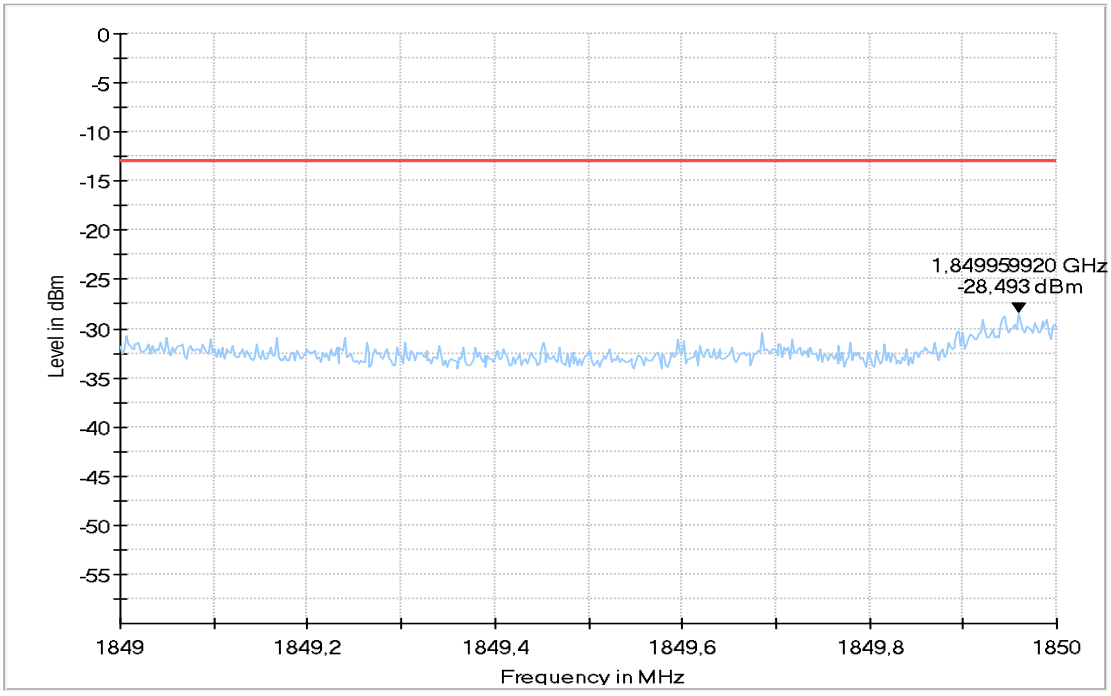


1.5.2. Radiated emissions on FDD Band II band-edge - Internal Antenna

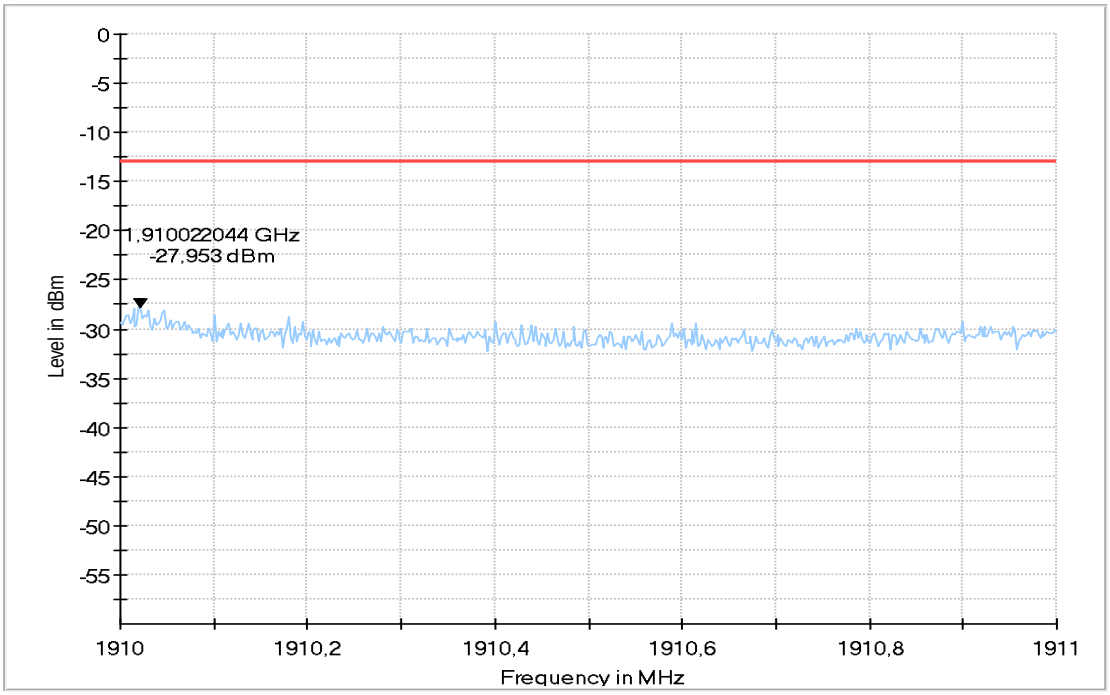
9.22a_BE_R_Ch9262_RMC_low_EUT_Standing



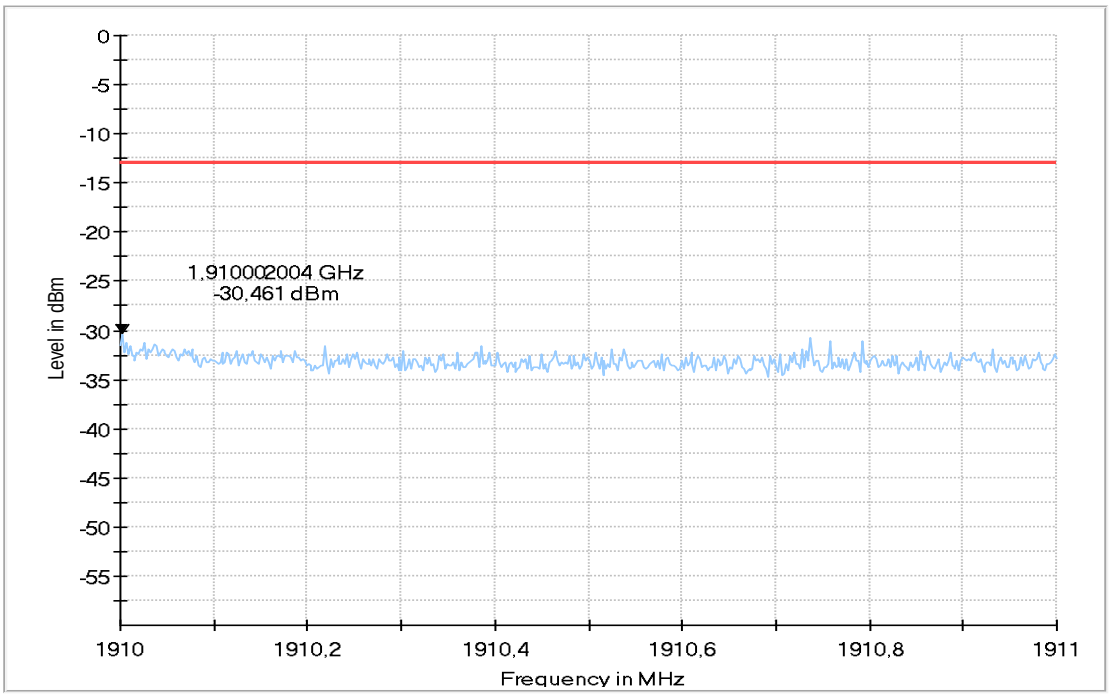
9.22b_BE_R_Ch9262_RMC_low_EUT_Laying



9.23a_BE_R_Ch9538_RMC_high_EUT_Standing

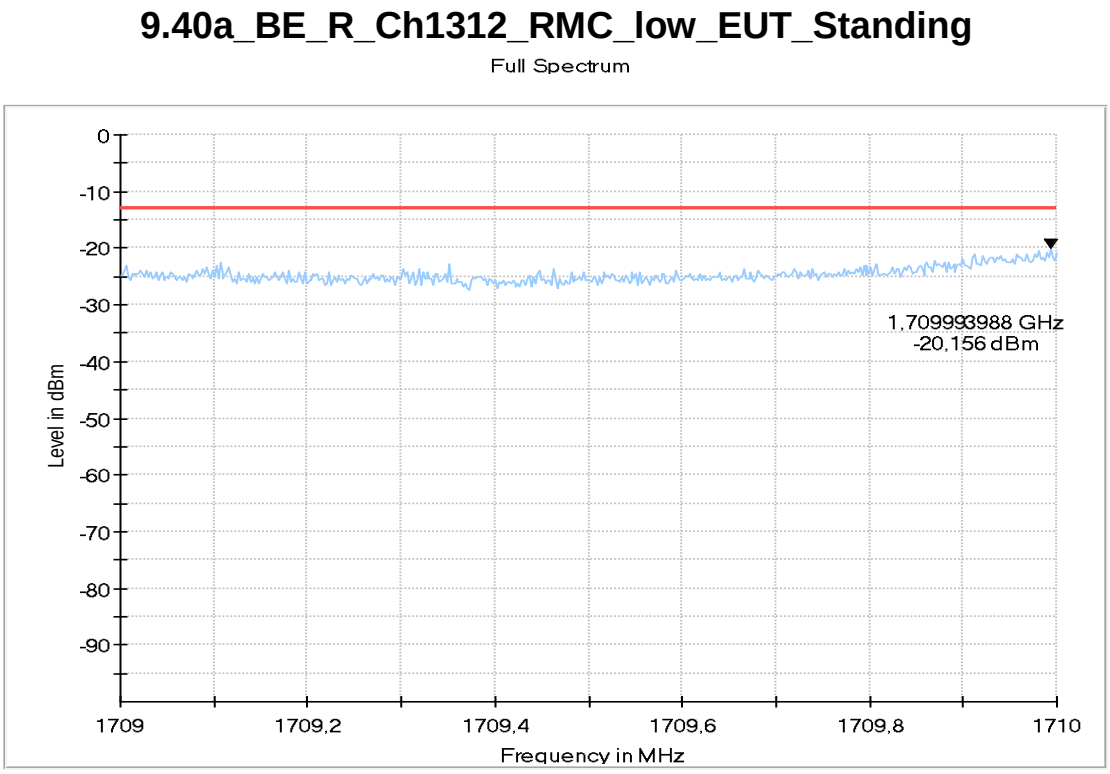


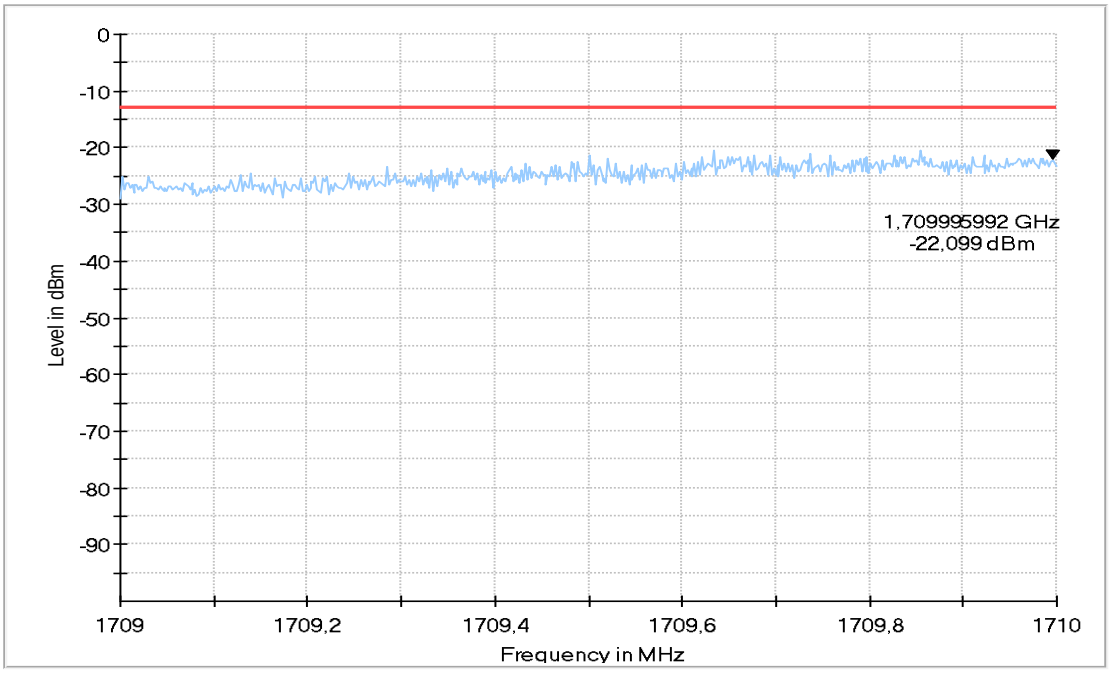
9.23b_BE_R_Ch9538_RMC_high_EUT_Laying



1.6. Radiated emissions on FDD Band IV band-edge

1.6.1. Radiated emissions on FDD Band IV band-edge - External Antenna





9.41a_BE_R_Ch1513_RMC_high_EUT_Standing

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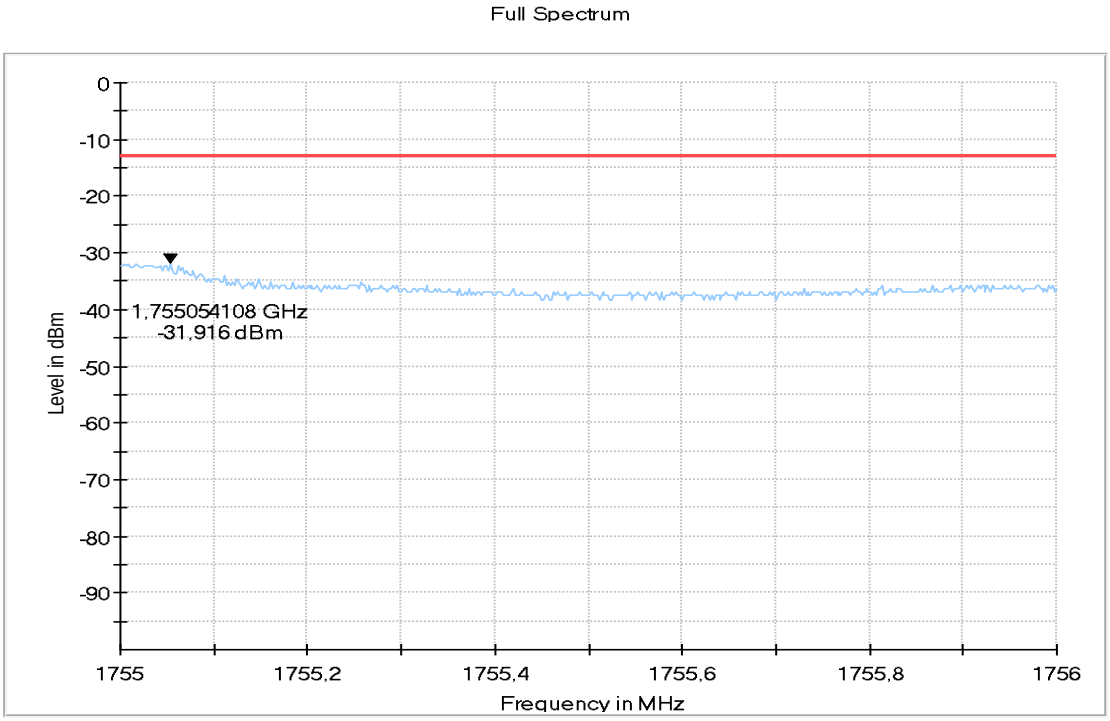
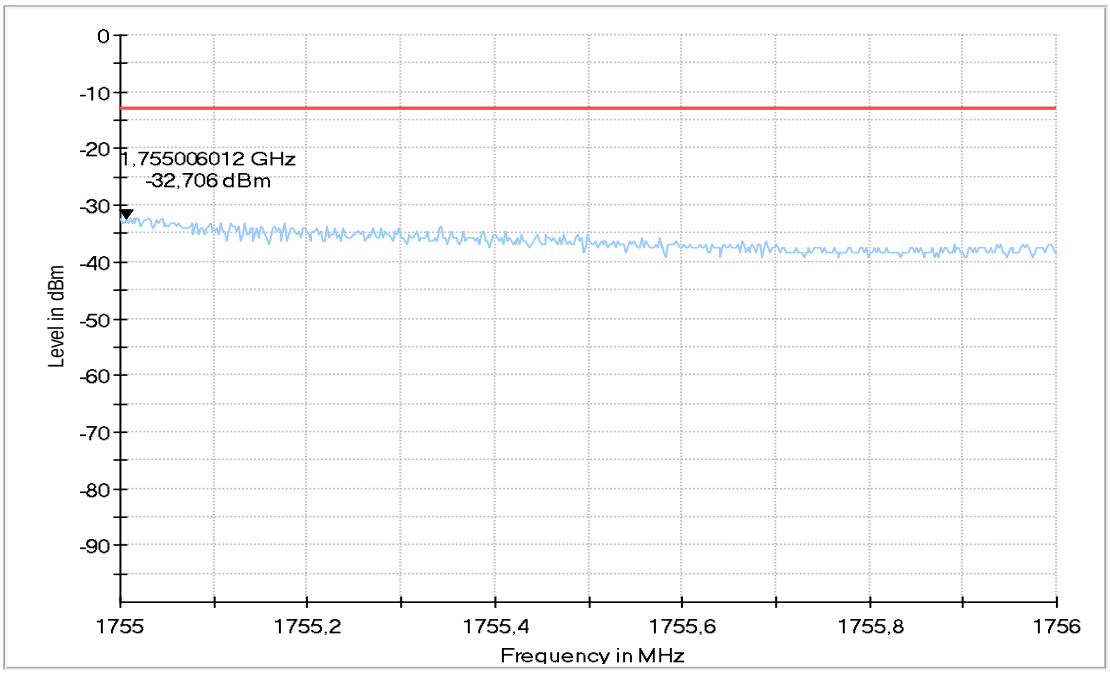
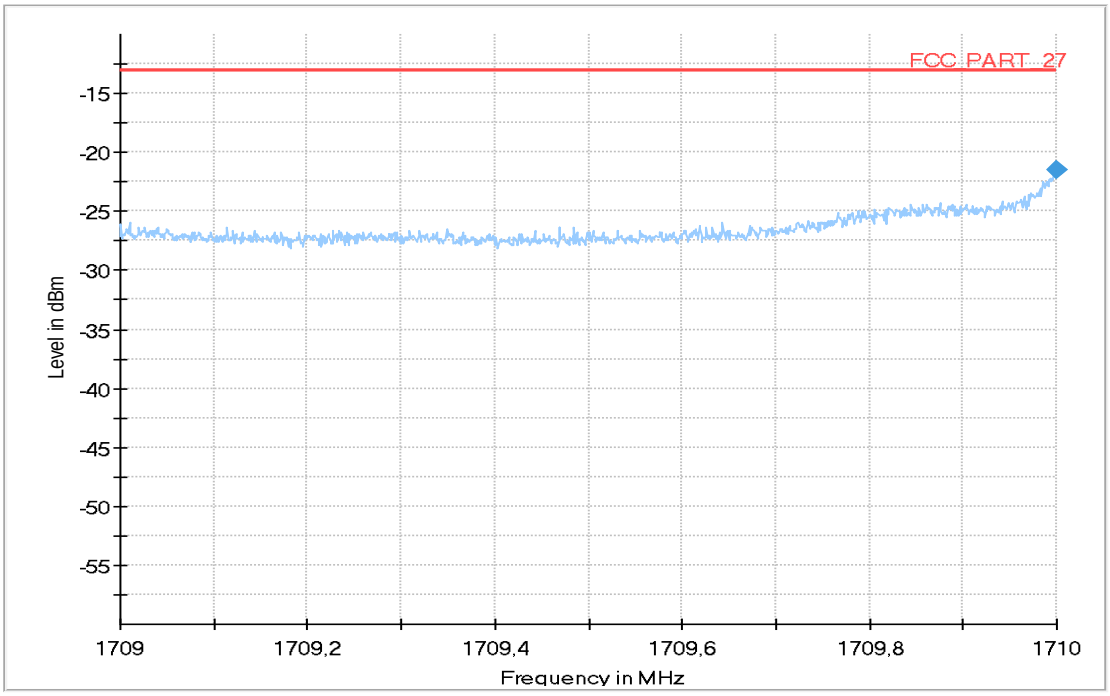


9.41b_BE_R_Ch1513_RMC_high_EUT_Laying

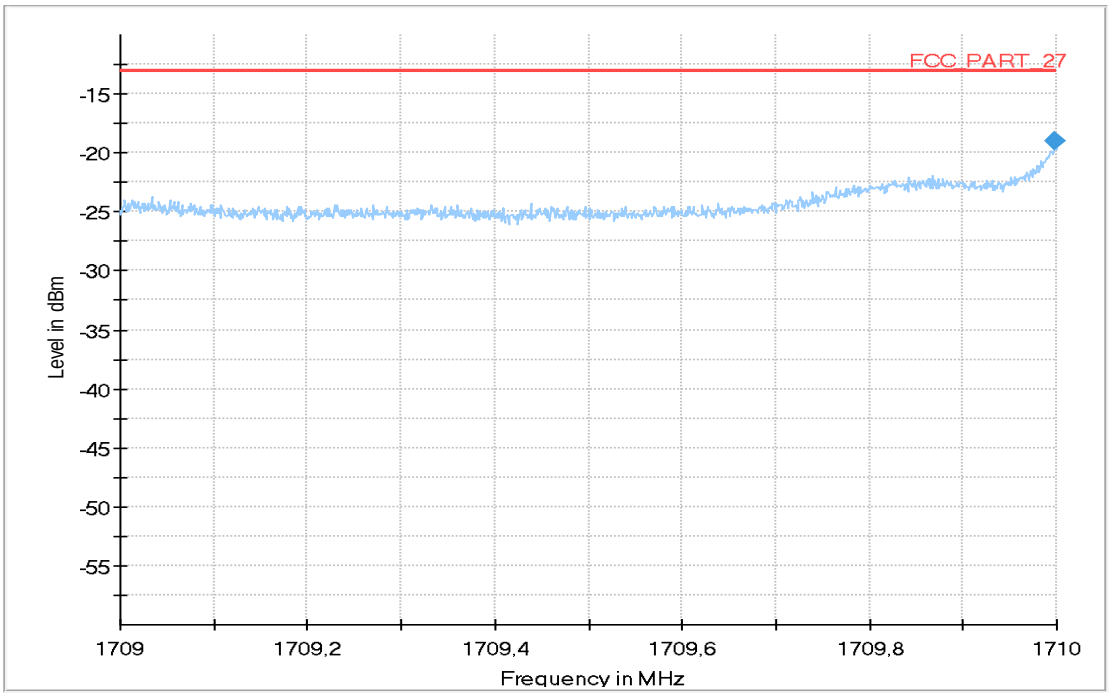


1.6.2. Radiated emissions on FDD Band IV band-edge - Internal Antenna

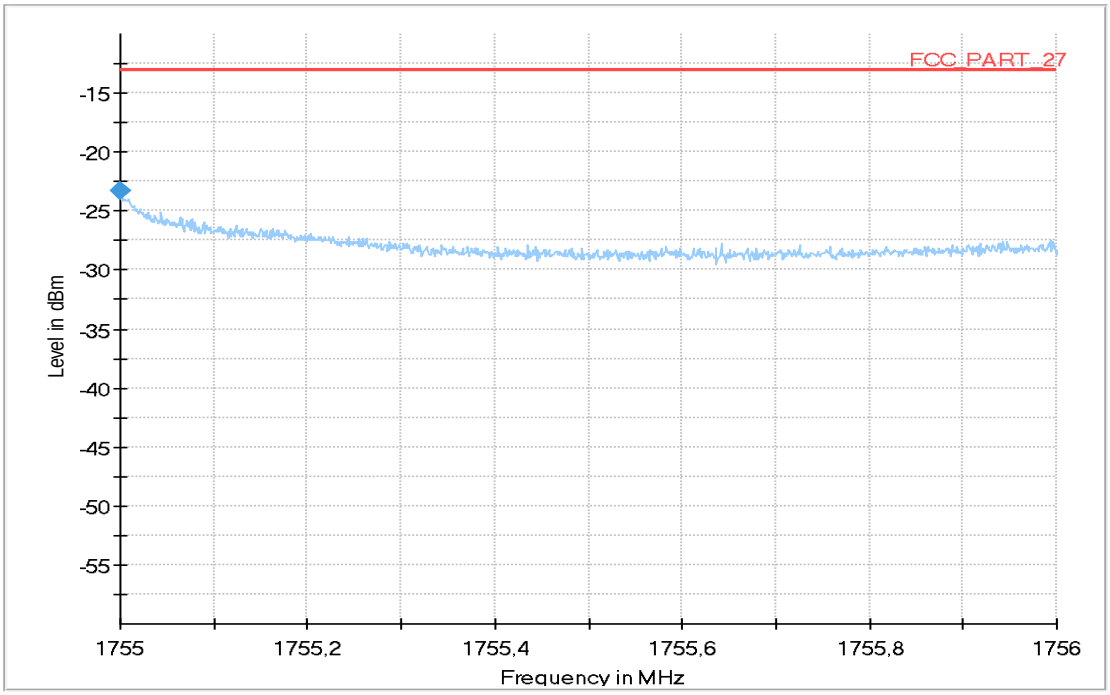
9.42a_BE_R_Ch1312_RMC_low_EUT_Standing



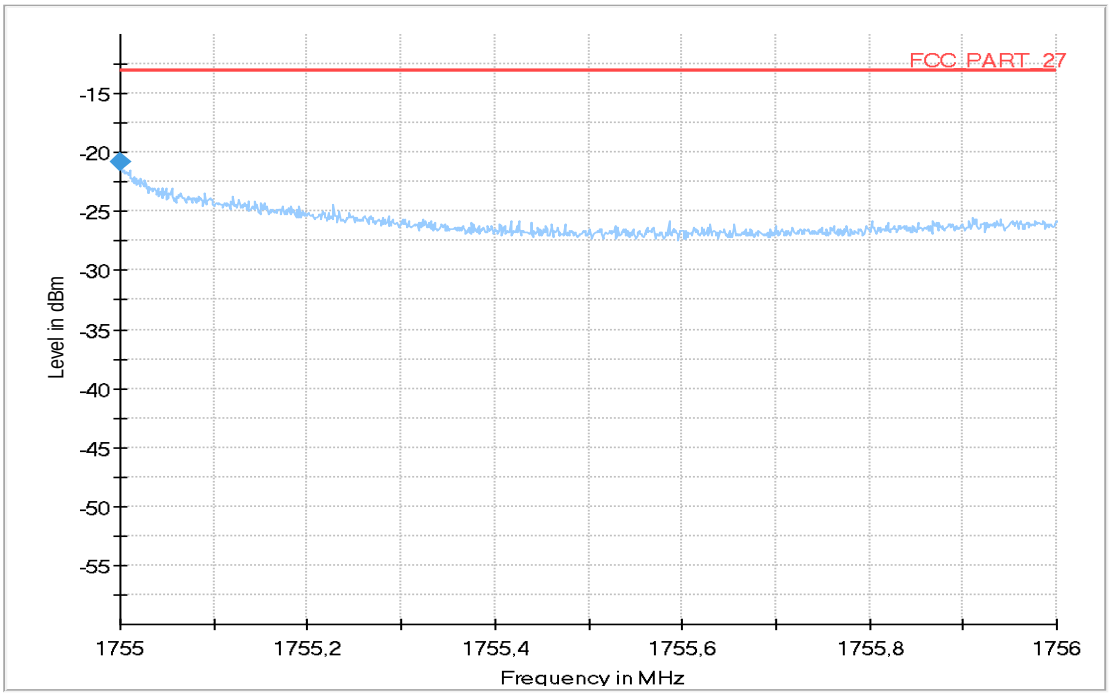
9.42b_BE_R_Ch1312_RMC_low_EUT_Laying



9.43a_BE_R_Ch1513_RMC_high_EUT_Standing



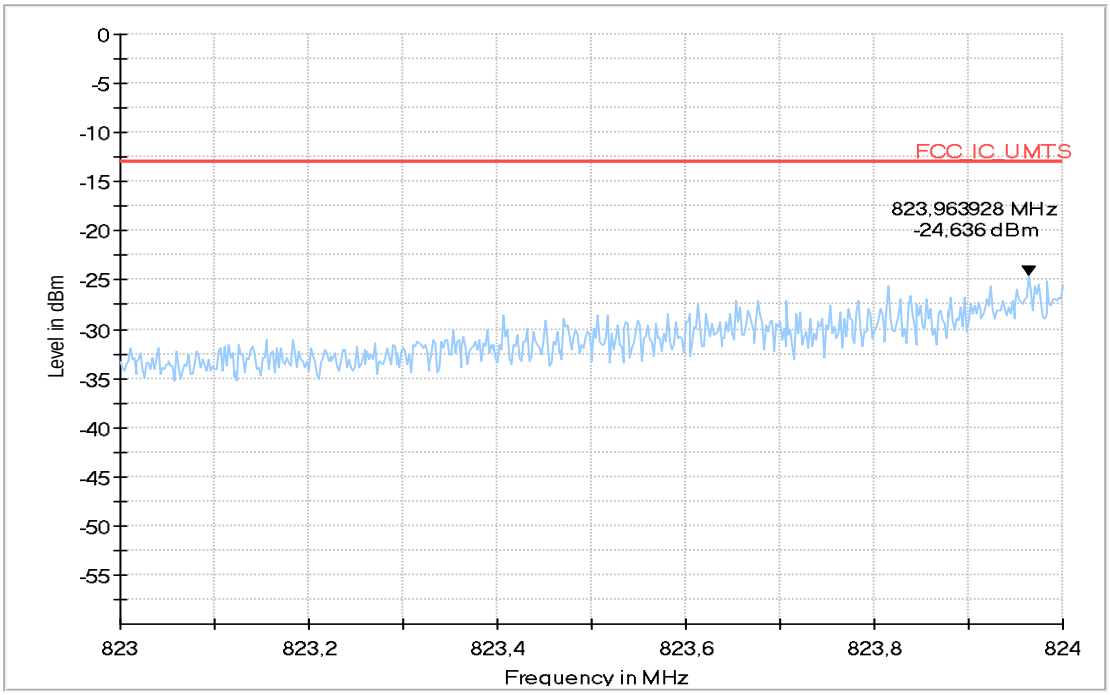
9.43b_BE_R_Ch1513_RMC_high_EUT_Laying



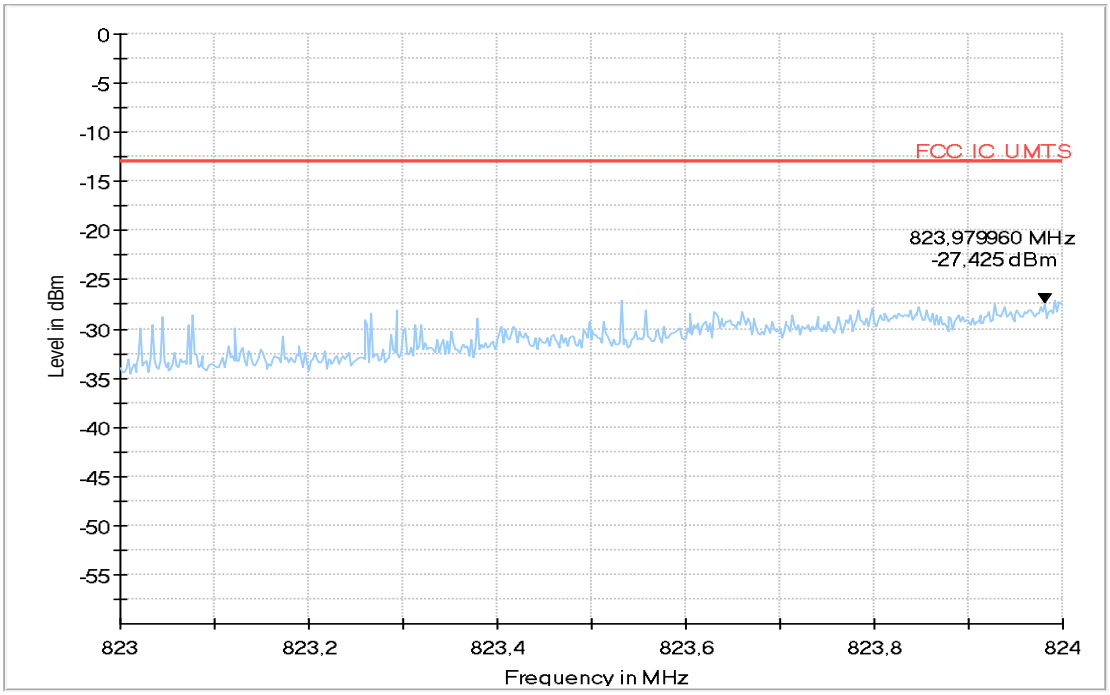
1.7. Radiated emissions on FDD Band V band-edge

1.7.1. Radiated emissions on FDD Band V band-edge - External Antenna

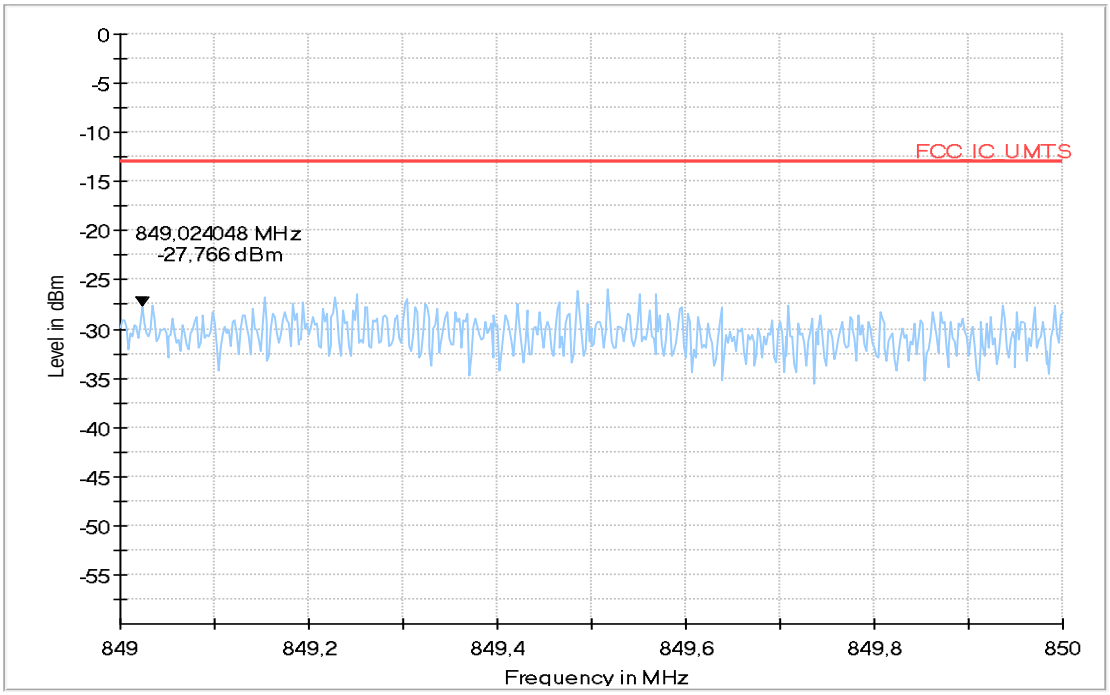
9.50a_BE_R_Ch4132_RMC_low_EUT_Standing



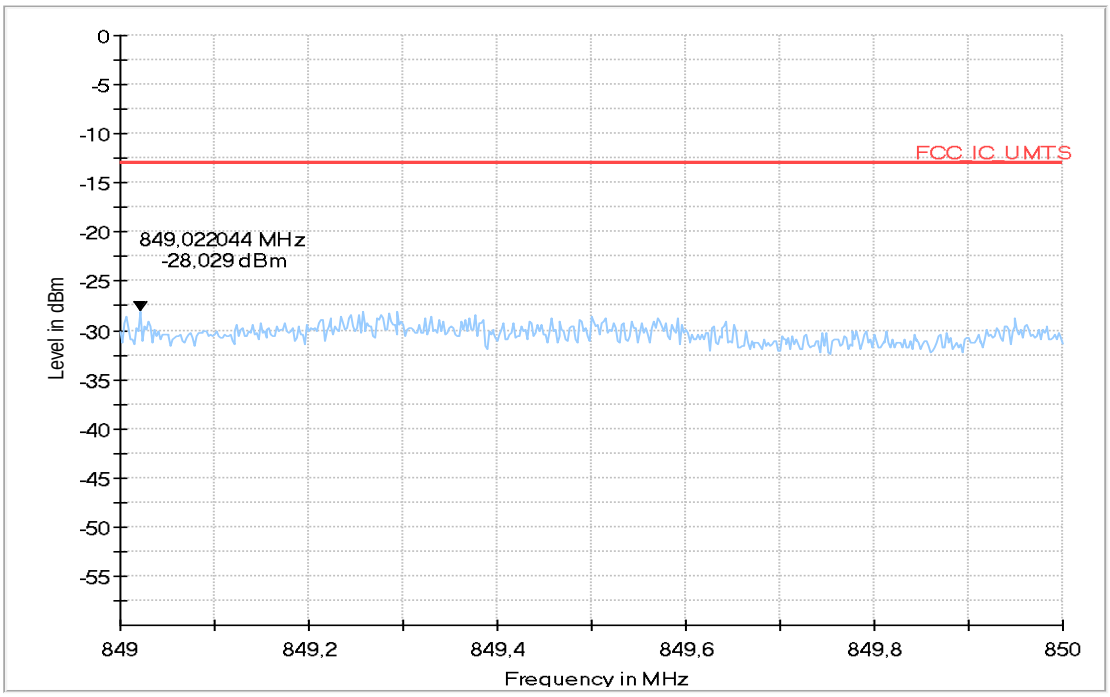
9.50b_BE_R_Ch4132_RMC_low_EUT_Laying



9.51a_BE_R_Ch4233_RMC_high_EUT_Standing

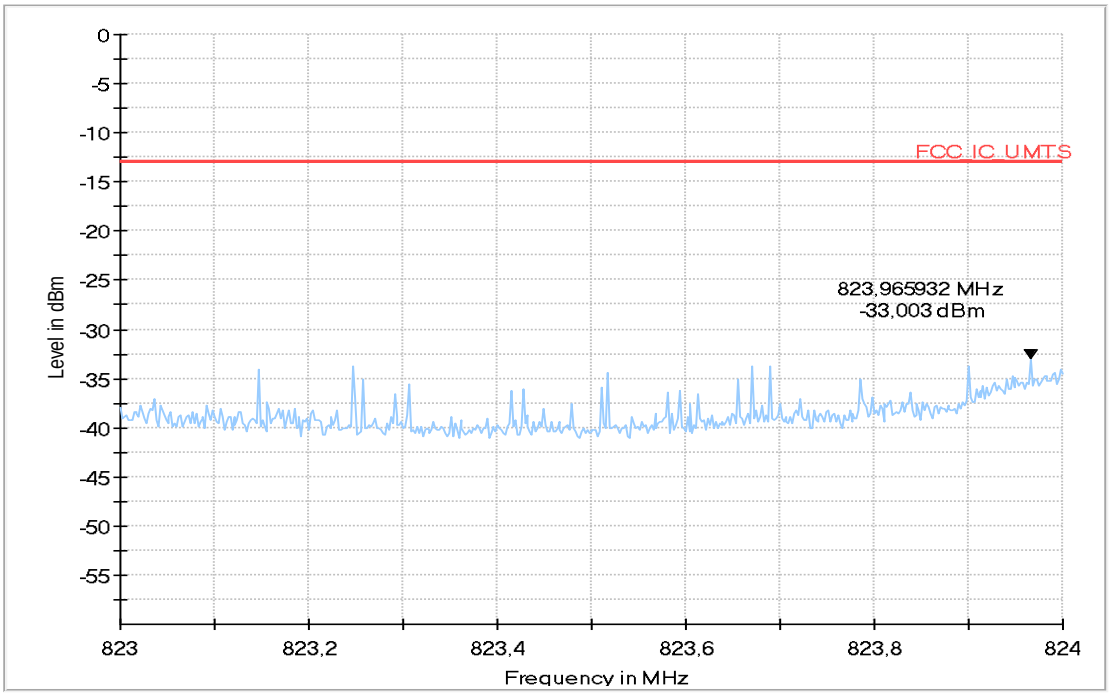


9.51b_BE_R_Ch4233_RMC_high_EUT_Laying

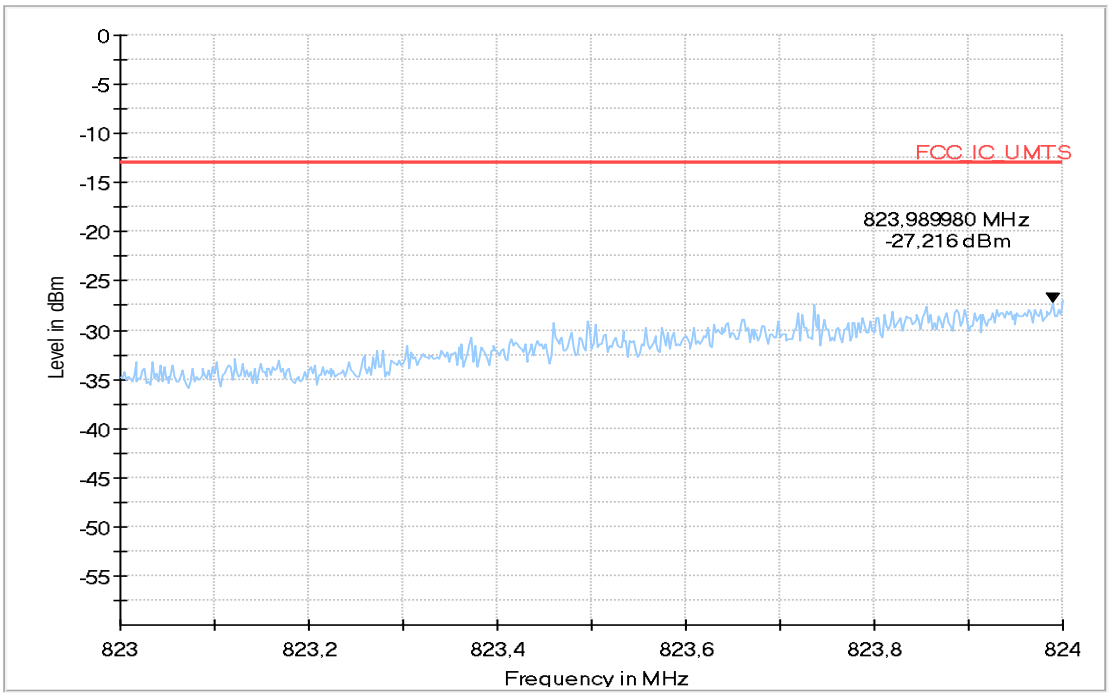


1.7.2. Radiated emissions on FDD Band V band-edge - Internal Antenna

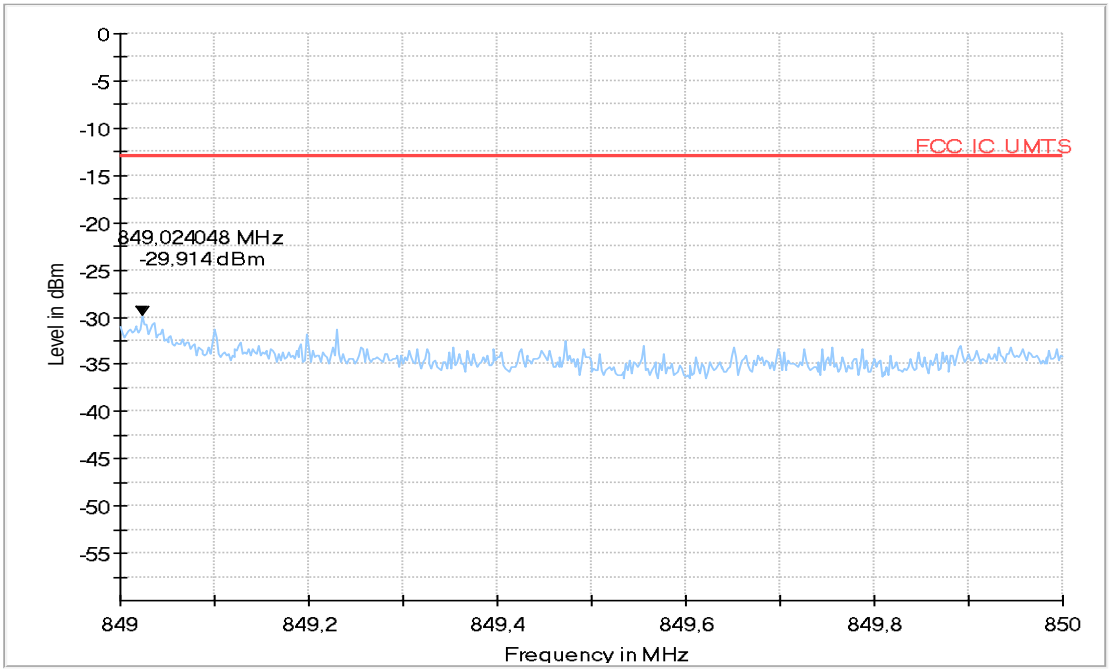
9.52a_BE_R_Ch4132_RMC_low_EUT_Standing



9.52b_BE_R_Ch4132_RMC_low_EUT_Laying



9.53a_BE_R_Ch4233_RMC_high_EUT_Standing



9.53b_BE_R_Ch4233_RMC_high_EUT_Laying